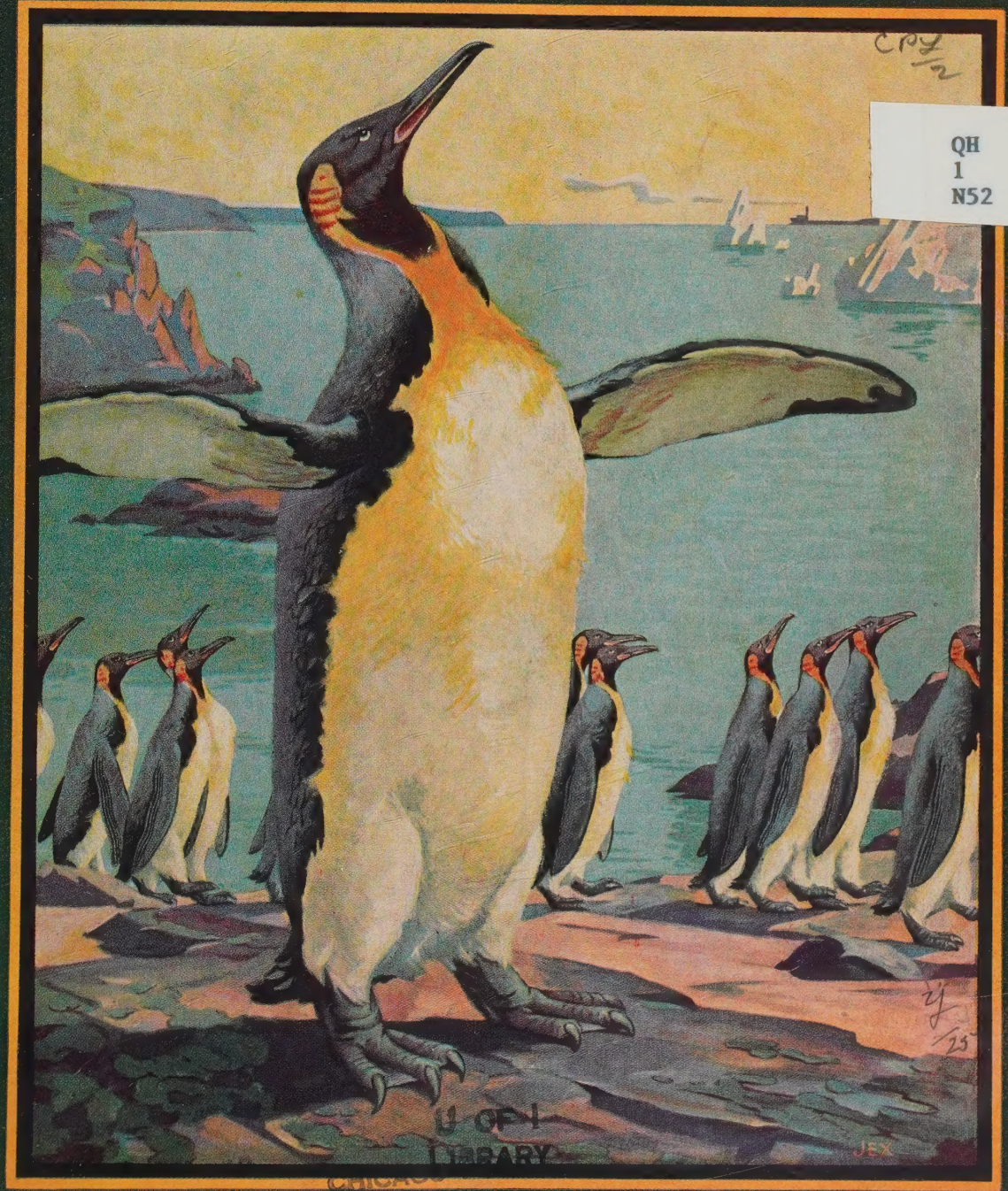
NATURE MAGAZINE



QH
1
N52

U OF I
LIBRARY

JANUARY 1931 35¢ VOL. 17, NO. 1

DO THE TROPICS CALL YOU?—

Answer Them and Join the Nature Cruise to the Caribbean

BRANCH LIBRARY No. 23 C. P. L.

Ro51
v.17

THE ROUTE OF THE CRUISE, AND, BELOW, THE S. S. CALEDONIA

OUR readers are not willing that our field trips should stop just because of wintry winds and drifting snow—hence a Nature cruise on the blue waters and to the Tropic isles of the Caribbean. Under the expert leadership of one thoroughly versed in the wild life of these summer lands, the Nature Magazine party will have an unexcelled opportunity to bring back memories of lasting value. Special and unique shore trips have been arranged at all ports of call—Bermuda, Haiti, Kingston, Colon, Havana, Nassau.

The rate of $378 covers accommodations of desirable and comfortable character. Less expensive staterooms may be had if desired. The fine Cunard Liner, "S. S. Caledonia", has recently been refitted in Scotland and is equipped to give the finest in an enjoyable cruise.

Good accommodations are necessarily limited so it is advisable to make reservations at the earliest possible date.

Join the American Nature Association's family party and enjoy the spirit already made famous by the trail trips to the West.

Sailing Jan. 24 — Returning Feb. 11

Rates from $378, Cover all Expenses

Write to

Director of Field Trips, American Nature Association,
1214 16th St., Washington, D. C.

433230

12 1 31

Travel DEPARTMENT

Edited by

ELEANOR WALKER

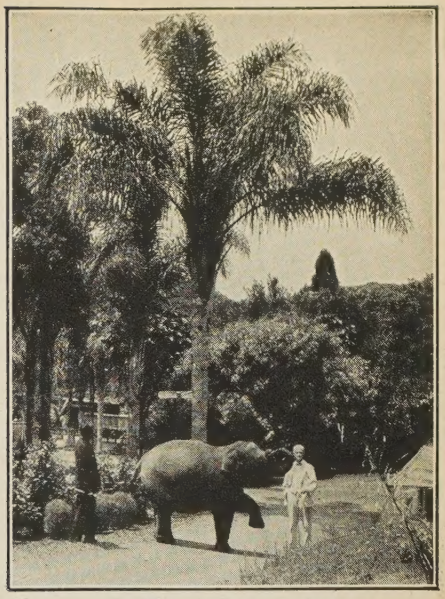
THERE come times for all of us when we need to scurry far away from the "status quo", and, in detachment, find some type of peace; perhaps the placidity of the countryside, where one settles down into the rustic routine of old clothes, kerosene lamps and well water with wonderful relaxation; or maybe the rest of isolation from time and space one senses on a boat; or yet the zestful peace of a new environment with foreign faces, customs and language. But there is one place, not so very inaccessible, whose peace is lyrical, whose quiet hours throb with ecstasy, as well as contentment.

Travelers roam the Occident and the Orient, and come back to Bermuda, happy to choose it as the final haven. It is incredible that so many tourists should come and go, year in and year out, and leave its charm untainted. But once you get away from the few comparatively dense spots of population, the island is yours with scarcely any consciousness that there are other visitors anywhere about.

Nature seems more kindly in these countries where almost always some caressingly gentle zephyr warms the earth and man. Some such evening in Bermuda, strolling just before twilight down a narrow lane between tall white coral walls, splashed with huge red poinsettia vines, you may hear the mellow song of some Jamaican cottager nearby preparing the family supper. You are alone, all else is quiet, so that the very hushness of the soft air and the rich ripe tones lull one's senses into dreamy ecstasy. It is very good to live on such an evening. You paddle along in your bathing suit and beach robe content to walk on unendingly.

Later on, dusk has fallen, dinner is over, and still a bit prim and precise in evening dress, you step up the clambering road along the water's edge into a world of eerie loveliness. The moon illuminates the water below so vividly that you may watch the swift dartings of silvery fish; it mellows the white of wall or cottage so that gleaming softly in the darkness, they too, seem part of a beautiful world dream; and it seems to waft the numerous islets off the shore into ever changing panorama—now you see a high fortressed hill set on a hill, hidden in clouds, and again a flock of sheep or a mere mass of clouds. Is it all a fantasy? Cumbersome and responsibility-laden mere human that you are, can you actually be here, moonstruck in this wraith of eeriness? You must surely have come hence on the wishing carpet.

Although there are no strenuous mornings in Bermuda, you will perhaps feel some day that you should and must and will hike up the hillside to the lighthouse on the western end. After you get there, you climb more, tread, tread, tread, stair after stair, seemingly interminably. When you step out on the lighthouse balcony, and find that in one glance your vision encompasses the



In Mitchell Park, Durban

SOUTH AFRICA

Golden Days— Starry Nights!

Winter—and you long for sunny lands, genial climes! Connoisseurs of travel joys are turning toward South Africa where floods of sunshine, blue skies, and exhilarating atmosphere fill one with fresh zest for all outdoor sports—And your eyes may feast on a wealth of wonders such as only Africa offers.

Where else can you see Victoria Falls? The charming, historic Cape Peninsula? Mines that yield more than half the world's gold? Famed Kimberley, whose sparkling gems bedeck the fair ones of earth? The Bantu with his primitive kraal, unique tribal ceremonies, his witch doctors and war dances?

You will stand in awe at the tomb of Rhodes, on a granite hill of the Matopos, as you ponder the colossal dreams of the empire builder. Zimbabwe—supposed source of Solomon's gold—will recall the fascinating tales of Rider Haggard. And you may span the centuries with curious speculation of Africa's early cave dwellers as you examine the rock paintings of ancient Bushmen.

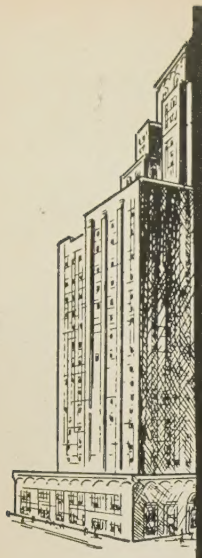
A Zulu Ricksha Boy

13,000 miles of modern railroads with de luxe express trains, splendid motor highways, and excellent hotels, minister to your every comfort and convenience.

Full information and booklet OD-2 will be gladly supplied by the Director, SOUTH AFRICA TRAVEL BUREAU, *11 Broadway, New York City.*

3-1653

40176



"South of the Mason-Dixon Line"

is but another way of saying "Hospitality"

HOTEL LUDY

South Carolina Avenue at the Boardwalk

Atlantic City's Newest
Centrally Located Fireproof Hotel
is South of the Mason-Dixon Line.

Its *rates* are as *pleasing* as its hospitality.
$5 up Daily—American Plan—$30 up Weekly
$2.50 up Daily—European Plan

Fireproof Garage Attached
R. B. LUDY, M. D.

The HOTEL LUDY
ATLANTIC CITY, N.J.

HOTEL STRAND

ATLANTIC CITY, N. J.

(At the Ocean end of Pennsylvania Ave.)

You can live at THE STRAND until next spring cheaper than keeping house and living at home. These are the reasons why:

Single rooms with running water $30.00 weekly, American plan; one person.

Single rooms with private bath as low as $36.00 weekly, American plan; one person.

Double rooms with bath as low as $72.00 weekly, American plan; two persons.

Double rooms with running water as low as $60.00 weekly, American plan; two persons.

These rooms may be had on the European plan if desired.

All of these in a fireproof hotel

THE STRAND is noted for its Homelike American plan table

T. E. RANDOW, Mgr. H. B. RICHMOND, Propr.

There's an air of hospitality that you'll like
AT THE HOTEL
PICCADILLY
227 WEST 45th ST. at BROADWAY
NEW YORK

ADJACENT TO EVERY ACTIVITY
600 BRIGHT SUNLIT ROOMS
EACH WITH BATH,
ELECTRIC FAN, ICE WATER
SINGLE ROOM AND BATH $3.00
DOUBLE ROOM AND BATH $4.00
Exceptional Restaurant & Grille
WIRE AT OUR EXPENSE FOR RESERVATIONS
F. D. SOFIELD · MANAGING DIRECTOR

TEST YOUR ART ability FREE

If you like to draw, test your natural sense of design, proportion, color, perspective, etc., with our Art Ability Questionnaire. Learn if your talent is worth developing. You will be frankly told what your score is.

Many Federal Students and Graduates are making $2,000, $4,000, $5,000 and $6,000 yearly. The Federal Course is recognized everywhere by art employers and buyers of commercial art. Learn at home in spare time, without previous training. **Personal, individual criticisms on your work.** Get this free test—send now for your Questionnaire. State age and occupation.

Federal School of Commercial Designing
1923 Federal Schools Bldg., Minneapolis, Minn.

$250 EUROPE

Price includes round trip ocean passage, transportation abroad, hotels, meals, sightseeing and tips. Itineraries to every country in Europe. Write for free booklet, "E232"

THE TRAVEL GUILD, Inc.
180 North Michigan, Chicago
521 Fifth Avenue, New York

whole of the tiny island with the wide sea surrounding, you have a feeling of gorgeous detachment from life as it ordinarily is lived. It is a lovely panorama, this green spot, so small compared to the boundless water surrounding it, and yet so cozy with its coral houses of white, pink or blue planked by green cedar trees. Here on top of this small splash of emerald, set off like a jewel with a border of loveliest topaz sea water, you are a bird of passage, lighting for a moment mid-ocean but forever free with wings unclipped. For such a moment you may well come far.

Or it may be another sunny day, and you are on a high cliff on the south shore. The path meanders up and down but always below you is that gorgeous water such as you've never seen anywhere else,—that clear blue green edging the island like a ruff, and deepened here and there with the purple of a coral reef lying close to the surface of the sea. As you go along, you come to Elbow Beach, one of those long smooth stretches of sand where you can alternately swim and loll the days away with great contentment.

St. George's, way down at the end of the island, is an old town of tropical quaintness —so lovely with white walls and gay flowers, withal so gently quiet. There are lovely marine views from here, and were one to be in Bermuda long, there would be discoveries to be made on long walks on this shore. Hamilton is the gay spot—dancing in high walled courtyards, underneath the moon showing the dark silhouette of wall top and palm trees—marvelously appointed hotels and clubs,—shops that lure one into getting rid of the English coins so recently exchanged for American bills.

But you'll undoubtedly love best of all to wander by yourself over this island only twenty miles long and at its widest six miles broad and make your own discoveries of flowers and cottages. English villas, and church-spired valleys. There are no automobiles and no street cars, no trains and no clamor in the length of the land,—so that when you do saunter along the road, you may do so in utter peace.

Round The World

Bird talks made before American and Chinese students at Lingnan University, near Canton, China, and given also in the Philippines and on board the *President Taft* were some of the features of the round-the-world cruise taken during the first half of 1930 by Harriet Williams Myers, President of the California Audubon Society. She carried Audubon literature into such far distant places as Egypt, Syria and Japan, and found much response to bird conservation teaching throughout the countries visited. Mrs. Myers saw many unusual types of birds on her trip, most interesting of which was the hoopoe, which kept with the steamer for several days as it travelled the Red Sea. Mrs. Myers is back once more at the editorial desk of the *Phainopepla,* the bulletin of the Society.

More Go To Parks

An increase of more than 130,000 visitors to the National Parks in 1930 is reported by Director Horace M. Albright of the National Park Service. In the year just ended, 2,818,618 people saw one or more

of the 23 parks, as compared with 2,680,597 in 1929. Yosemite was most popular with 458,566 visitors; Mt. Rainier, second with 265,620. The heavier use of the parks was more remarkable, Mr. Albright pointed out, when compared with reduced use of transcontinental trains and summer resorts. The National Monuments were not as well patronized as formerly, the reduction being approximately twenty per cent.

Australia Preservation

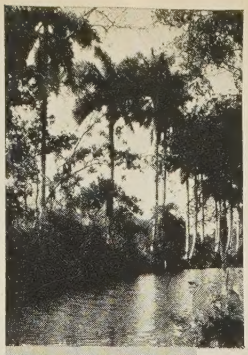
The Wild Life Preservation Society of Australia attained its majority during May of this year. For twenty-one years, since organized by Count Birger Morner, at that time Consul General for Sweden in Australia, the society has effectively fought for conservation of game and plants on the continent, has supported legislation relating to birds and animals, and has been instrumental in adding large areas to Australian sanctuaries and National Parks. One of their recent achievements has been the establishment of Mount Warning National Park of 4100 acres. It has been a strong protector of the Koala, sold in the fur-trade as Wombat, and recently requested President Hoover to put an embargo on the animal and its skin to cut down the large shipments which were depleting the species in Australia. One of its strongest fights has been waged against the poisoning of marsupials and other animals, particularly with cyanide of potassium.

Snow in Tropics

Snow falls even in summer in a part of the United States that lies in the tropics—on the high slopes of Mauna Kea, the highest peak in the Hawaiian Islands. Although only twenty degrees from the equator, this peak, which rises 13,784 feet above the sea, is frequently white with snow, and in winter is heavily covered. The mountain is a volcano, although now quiescent, and its lava slopes are so porous that most of the rain sinks into them without forming streams strong enough to cut deep channels. A very interesting topographic map has been recently issued by the Geological Survey, Washington, D. C., copies of which are available at ten cents. This shows the lava terraces and the forested tracts on the northeast slope, on which the prevailing trade winds deposit their moisture.

Conditioned Reflex

A columnist in the *Cincinnati Enquirer* recounts an interesting experiment in piscatorial psychology that proves that fish can learn their lessons even too well by the trial and error method. A naturalist, the story goes, divided an aquarium with a clear glass partition, placing a lusty bass in one section and very edible minnows in the other. The bass struck every time a minnow approached the partition—that is, at first; after three days of bruising his nose, he was content to live on the food dropped in for him. Then the glass was removed, and now the minnows swim all around the bass, but he does not strike at a single one. His nose told him that something happened when he went after the minnows. The columnist believes there is a moral to the story: "Take another shot at the glass partition. Perhaps it isn't there any more."



OUT OF DOORS IN CUBA

A New Thrill—Everywhere You Turn

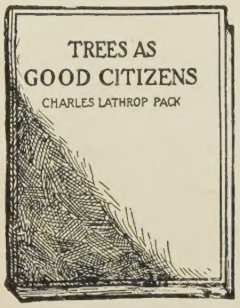
SHADED highways of adventure . . . leading to new scenes of thrilling contentment . . . tropic valleys smiling in sunlight . . . mountain peaks brooding in purple mists . . . sun-drowsy villages — exotic vessels of the peace and passion of living . . . these are Cuba's perennial lures to the Out-of-doors. Hundreds of miles of new motor roads dip over the hills from Havana . . . through the gorgeous rural country of Cuba . . . across the valleys of Yumuri and Viñales . . . to the provinces of Pinar del Rio, Matanzas, Santa Clara, Camagüey and Oriente . . . to the Caribbean cities of Batabano, Cienfuegos and Santiago. Easy roads to out-door thrills . . . stalking deer through lush forests . . . flushing quail against a background of Royal Palm groves . . . tramping across vast plantations of tobacco, sugar and coffee . . . following jungle paths, overhung with air plants and branches of Mahogany, Granadillo, Majagua or other tree monarchs of the tropics. Here is Dame Nature in a different mood . . . languorous yet vital. ¶ For more urban open-air pursuits, you have in the seaside metropolises well-groomed golf courses . . . tennis courts . . . spirited saddle horses . . . yachting . . . deep-sea fishing . . . beaches and bathing . . . seafront promenades . . . and the rhythmic pound of the waves. ¶In Havana . . . brilliant, sophisticated, charming . . . where the gaiety and color of Old Spain are combined with modern standards of luxury and comfort . . . are the effete pleasures of horse racing . . . jai alai . . . theatres . . . dancing . . . open-air cafes . . . country club life . . . and the varied excitements of the Casinos. Here's a different winter recreation for you . . . gay living in a foreign capital mingled with the joyous freedom of rural out-of-doors . . . all within telephone's reach of your office. : : : : : :

For information, any tour bureau, or ticket office—any Cuban Consul, or the Cuban National Tourist Commission, Havana, Cuba.

THESE BOOKS BELONG IN YOUR LIBRARY

Trees as Good Citizens

Price $4.00



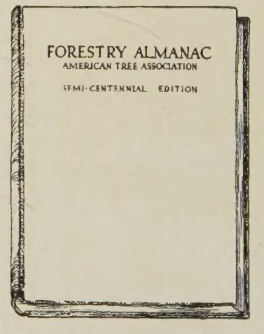
SPREADING their shade and foliage like a great triumphal arch, trees are essential to every American home. This book, containing 16 beautiful color plates, tells you all about the shade trees. Ideal for the home owner. Cloth bound with gilt lettering.

Forestry Almanac

Price $1.00

390 pages of complete information about forestry organizations, national, state and local, with facts and figures upon forestry conditions in all countries.

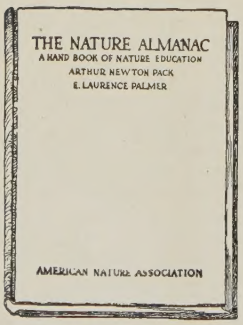
Published to aid schools, libraries, newspapers, foresters, lumbermen and others to have pertinent forestry information in condensed form. The only book of its kind in America. Sold at less than the printing cost.



The Nature Almanac

New Edition now ready.

Price $1.00



A Handbook of Nature Education. The first Nature Almanac ever compiled. It is of great practical service to Educators. Contains a Nature Education Survey of the United States, a School Nature Outline, a Practical Nature Bibliography and many other Features.

Order from

The American Nature Association

Washington, D. C.

When children of the world cry—"We're HUNGRY!"

A Deed for the New Year That is Sure to Bring Spiritual Reward...

At the brink of a New Year, humanity takes stock of itself. It is a period during which fine, ennobling resolves are made.

In American possessions, such as Porto Rico, thousands of children are STARVING, because of conditions over which they have no control.

Elsewhere around the globe there are hundreds of thousands of other tiny sufferers, pleading for bread . . . for release from dread famine.

You . . . can—and WILL—feed these hungry children. Every great-hearted penny helps to buy food that saves child life, enriches your life.

Think what it will mean to you . . . for years to come . . . to know that you have saved the lives of little children!

Having contributed, the New Year will be a happier one . . . your heart will go singing through the year and you will hear that most sublime benediction of all: "Well done, good and faithful servant!"

The donor may designate his gift for any philanthropy in which he is especially interested and one hundred cents of every dollar will go as designated—none for expenses.

Undesignated gifts will be allocated by the Survey Committee after careful investigation to meet the most acute needs through the most efficient agencies.

THE GOLDEN RULE FOUNDATION,
Lincoln Building, 60 E. 42 St.,
New York, N. Y.

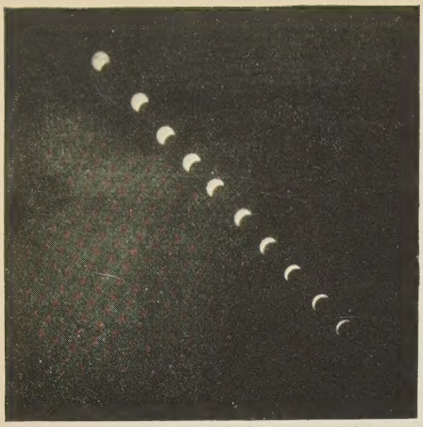
Enclosed find $_____ to be used in meeting the needs of suffering humanity.

NAME _____

ADDRESS _____

Designated for _____

The Golden Rule Foundation



Eleven separate exposures of the Partial Eclipse in 1925 as seen from Bound Brook, N. J.

Snapshooting an Eclipse

In October scientists secured further valuable records and data of an eclipse of the sun. At Niaufou Island in the South Pacific they set up their equipment; spectroscopes, huge telescopes and giant cameras to learn more secrets of the fiery body, 93,000,000 miles away. They hoped to find out more about the sun's power to deflect light rays from the stars as predicted by the savant Einstein.

We are told that in the 93 seconds of eclipse some very important information was obtained along with remarkable photographs made with a 65 *foot* camera.

An eclipse of the sun, as we know, is caused by the moon passing between it and the earth.

EDITED BY ROBERT T. LOWELL

I AM PHOTOGRAPHY

I turn back the pages of the Book of Memory. I bring you Thoughts of Past Years and Old-time Friends. I keep forever Green the Happy Hours of Childhood. I dull the Pangs of Bereavement and blunt the Edge of the Grim Reaper's Scythe. I carry the News of the World, and bring you Visions of Far Distant Lands. Our modern Civilization is largely dependent on my Efforts. Though Men may Pass and Empires crumble to Dust, my Magic will preserve their Likeness for Future Generations. Not Purse-proud, I am within the Reach of All. I solve Mysteries impenetrable to Mortal Eyes; I ferret out the Criminal when other Means have failed. I illumine the Pages of History, and make Learning possible for the Multitude. Born instantaneously in a Ray of Light, I become Everlasting. As necessary in War as in Peace, I am Man's Servant, and yet his Master. I am an Art—and yet a Business. I am Photography.

CHARLES ABEL

COPYRIGHT, ABEL PUBLISHING COMPANY

Taken with an inexpensive box-type camera. Good light with subject ten feet or more away is all that is required for good results

$500 in Prizes!

Amateur picture takers are offered that amount in cash and value in merchandize prizes by the Sports and Trails Publishing Company, 1645 Hennepin Avenue, Minneapolis, Minnesota.

It is to be the "Hunting-With-A-Camera-Contest" and should be of decided interest to all nature lovers and outdoor enthusiasts. Picture subjects that are eligible are, Hunting, Boating, Games, Sports, Winter Scenes, in the one class and Wild Animals and Birds in their native haunts in a second class. The grand prize is a $115 Agfa Ansco Motion Picture Camera. There are forty other cash prizes, two $50, two $25, two $15, ten $10 and twenty-four $5 awards to be made.

Pictures submitted must have been made after September 15, 1930 and entered by February 28, 1931. Write to address given for complete information. Contest is strictly for amateurs. A "lucky" shot may win.

This Matter of Exposure

Next Month We Will Show Why Some Pictures Are Blurred

As a photographic term *exposure* means the amount of light admitted through the lens to record a latent image on the light sensitive film.

The excellence of a picture depends very largely on exposure. While most camera films permit of considerable latitude in exposure time we will get a greater percentage of technically good pictures if we know what is wrong with those previously made.

To help you determine whether a negative is under or over-exposed, study the pairs of pictures here reproduced. The picture at the left, in each case, represents the negative from which the print was made. Of course, in a *negative* the highlights are dark and the shadows light.

The little manual of directions that came with your camera tells how to make exposures under all conditions of light. Remember that it is better to give a trifle *too much* rather than not enough exposure.

A properly exposed negative

Print of properly exposed negative

PAIR NO. 2—UNDER-EXPOSURE

An under-exposed negative

Print from under-exposed negative

An under-exposed negative is one that failed to receive enough light to bring out proper detail. A considerable portion (the shadows) is almost transparent. The image is weak, hazy.

PAIR NO. 3—OVER-EXPOSURE

Slightly over-exposed negative

Print from over-exposed negative

In an over-exposed negative, highlights and shadows lack brilliance. The whole film is dark, "muddy" and lacking in brilliance. The print is also likely to be "flat" and "washed-out" looking in parts.

TEN MILE EYES!

10 POWER

$23.95 Pre-paid

"Cheap at $50"
—says Navy Man

Buy Direct—SAVE HALF

TEN MILE EYES! Think of the things you can see! Ten mile radius—a 20 mile circle—nearly 400 square miles. And you can easily have them. If you can see one mile, these superpower French 10x32mm. stereo-prism binoculars will extend your vision 10 TIMES. ENJOY YOURSELF 10 times more! Multiply pleasures of hobby and sport. Use a pair touring, observation, hunting, golfing, nature study, astronomy, etc. Superbly made for a lifetime of service. Case and straps free.

10 Lenses

Did you know many ordinary field glasses have but four lenses and most of the better ones only six? But this binocular has 10 LENSES and 4 PRISMS. No wonder it gives an expansive field, brilliant illumination and fine definition.

4 Prisms

Extra Power Without Extra Cost

Send $23.95 today for one on FREE TRIAL. Or $1 for one C. O. D. paying postman balance and few cents postage. Check and compare it in every way for five days with others selling for double or more. If you do not like it for any reason whatever your money will be promptly returned. Every glass tested. The U. S. Gov't and State Forestry Dep'ts buy from us. The same in 8x only $18.50. Surpasses others at $23.50 and more.

FREE TRIAL

CATALOG Over 200 Glasses ALL MAKES—$1-$110

Everything in binoculars, field glasses, telescopes, and optical instruments. The finest and largest assortment in America. Catalog gives all information how to choose the best for your individual needs at LOWEST PRICE. Dealers write for prices and catalog of other models.

Try America's Leading Binocular House First

DuMaurier Co., Dept. 81, Elmira, N. Y.

Photography for PLEASURE or PROFIT

A fascinating hobby or a profitable business can now be yours. Prepare quickly at home under the personal guidance of leading experts in the fine art of photography. No experience necessary. Full or spare time. Many earn while learning. Our thorough studio method also qualifies you to fill a well paying position upon graduation. Send coupon below at once for FREE booklet, *Opportunities in Modern Photography.*

AMERICAN SCHOOL OF PHOTOGRAPHY
3601 Michigan Avenue Dept. 1601 Chicago, Ill.

Send booklet, *Opportunities in Modern Photography*, and full information.

Name _____

Address _____

City _____ State _____

WESTWARD HO!

with the
American Nature Association
to the National Parks
in 1931

Plan next year's vacation *Now!*

You must see Glacier, Yellowstone, Grand Canyon, Jasper Park, Canada and other scenic areas.

See them as the Association, with successful years behind it, can show them to you. Parties limited in size; a Naturalist to explain and inform; a conductor to assume all travel worries; and LOW COSTS!

Write today to have your name listed for receipt of the 1931 "On Western Trails."

AMERICAN NATURE ASSOCIATION

1214 16th St., Washington, D. C.

Heron in New York

The brilliant white-plumaged young of the little blue heron have once more appeared in Harriman State Park, evidently drawn by the large water areas made by the beaver dams and the succulent insect and amphibian life of the region. The birds were first thought to be egrets or white heron, both of which are also southern; but investigation by William H. Carr, director of the Trailside Museum, identified the birds as the young of the blue species. The first year, the little blues are all white, and not until the second spring do they get the bluish slate color of the adult form; but the young can be distinguished from the egret or snowy heron by their greenish-yellow legs. The visit of these birds to Harriman State Park is attributed to the attractiveness of the beaver ponds, in which wild rice has been planted and rich animal life is growing. The little green heron, the black-crowned night heron, the great blue heron, and an occasional loon are found in the vicinity.

Twin Evergreens

For the first time in the record of science an evergreen tree has borne twins, as a result of the efforts of Mrs. Tema Shults Clare, a teaching fellow at the University of Southern California. Mrs. Clare has twice been able to produce twin seedlings sprouting from one Torrey pine seed, and secured a pair of similar twins from a pinyon pine seed. A small percentage of pine seeds, research revealed, contain the beginnings of two or more plants. One ambitious pinyon seed had six little plants within it. The habit of twinning from single seeds is peculiar to gymnosperms, but the higher seed plants apparently do not possess this trait.

Another Old Man

The famous Old Man of the Mountains in Franconia Notch has a rival mid the tumbled peaks and drab desert of California's Death Valley region. It stands far off the beaten trail, near Darwin Falls, which is reached by turning off the Coso and Panamint mountain roads in the sterile Panamint Mountains. The expression of the stone profile, according to M. W. Hare, who recently discovered it, is humorous and ironical—ironical perhaps at being forever bound to so desolate a spot. Mr. Hare has just returned from a camera trip through the Red Rock Canyon and into Death Valley. Of Death Valley he writes: "Only to see that Valley is to understand the true definition of the word desert. The vivid colorings, intense blacks and dazzling whites, the salt pool, the abandoned wagons and gear, the deserted borax works, the pitiable and forlorn and nameless graves,—all within view of perpetual snow; the lowest spot in the United States, yet within a stone's throw of the highest."

OFFERS will still be received for the original of the frontispiece of our December issue.

LIVE YOUR SNAPSHOTS OVER AGAIN!

Sent FREE on Approval—Write TODAY!

Don't let an old-fashioned album "bury" your interesting prints . . . Enjoy showing them this clever new way . . . No pasting . . . You pass THE PICTURES, not "the album"!

FOTO-TAINER ends all bother in keeping and showing snapshots. Just slip prints, negatives in right size pockets. Slip out to show instead of juggling heavy, old albums that usually hold but ⅛ of Foto-tainer's capacity. Keep complete records of trips, persons in *single pockets*, marking notes on picture-backs. Foto-tainer, beautifully covered, embossed, sewn, sent FREE for 5-day trial. (An ideal gift for weddings, bridge parties, birthdays and Christmas.) Write TODAY specifying model.

Pocket size—antique cowhide $2 (holds 150). Medium size—imt. leather $2.75—gen. antique cowhide $5.50 (holds 400). Large size—imt. leather $4.50—gen. antique cowhide $7.50 (holds 500).

MEVI, Dept. A-1212, 545 5th Ave., New York, N.Y.

$15 FOR YOUR OLD GLASS

$35 Pocket. 8-power, 150 yards field, 10 oz. weight

To apply on the new improved $35 Mirakel 7 power, 7 ounce, universal focus pocket prism. A few guaranteed used ones at $19.50. Satisfaction guaranteed; sent postpaid on approval upon receipt of your bank reference. We carry everything in glasses up to 24 power. State price you wish to pay and save correspondence.

J. ALDEN LORING

Box K-1 Owego, N. Y.

GOERZ BINOCULARS

for NATURALISTS.

A Goerz Prism Binocular will appeal to the discriminating and deliberative purchaser. He will appreciate the outstanding excellence so evident in its every optical, mechanical and surficial detail . . Our unequivocal guarantee supports the purchaser's selection. *Booklet on Request.*

C. P. GOERZ AMERICAN OPTICAL CO.
317 East 34th Street New York City

VICTOR Portable STEREOPTICON

Has established the world wide standard of Projection Excellence

SLIDES MADE-TO-ORDER FROM YOUR BEST PICTURES (Negatives or Prints)

Victor Animatograph Co. 299 Victor Bldg., Davenport, Iowa.

WRITE FOR SPECIAL EASY TERMS

NATURE MAGAZINE

PUBLISHED BY THE AMERICAN NATURE ASSOCIATION

To Stimulate Public Interest in Every Phase of Nature and the Out-Of-Doors, and Devoted to the Practical Conservation of the Great Natural Resources of America

CONTENTS FOR JANUARY · 1931

Photographic Department....Robert T. Lowell 6
My Jungle Study.....Dallas Lore Sharp 11
Birds of the Bread Line.....Fannie Hoyt 15
Consider the Ant.....Caryl Parker Haskins 18
American Sculptors of Wild Life
Dorothy Pletcher 21
The Mascot of the Shop.....W. B. Clark 25
Some Birds of the Zoo...H. Armstrong Roberts 26
A Monitor Lizard's Life....Raymond B. Cowles 28
Orchid-Lover.....Adolph L. Fierst 32
Birds in Color.....R. Bruce Horsfall 33
Glimpses of Florida Birds..William Leon Dawson 37
A Song of Susan.....Lucile Quarry Mann 41
Why Tar Feathered Friends?
George Wilton Field 44
Among the Climbers.....Otto Wilson 47
Indian Buckskin.....Douglas Leechman 51
Star-Gazing with Binoculars....Isabel M. Lewis 54
Things to Think About..... 56
Western Trails..... 58

ORGANIZATION

THE MAGAZINE

PERCIVAL S. RIDSDALE.....Managing Editor
ARTHUR NEWTON PACK.....Associate Editor
RICHARD W. WESTWOOD..Chief, Editorial Staff
R. BRUCE HORSFALL.....Artist
EDWARD A. PREBLE.....Consulting Naturalist
HARRY E. RADCLIFFE.....Business Manager
PAUL F. HANNAH.....Assistant Editor
GARNET W. JEX.....Assistant Artist

THE ASSOCIATION

ARTHUR NEWTON PACK
President
Princeton, N. J.

CHARLES LATHROP PACK
Chairman Board of Directors
Lakewood, N. J.

PERCIVAL S. RIDSDALE
Secretary-Treasurer
Washington, D. C.

RICHARD W. WESTWOOD
Assistant Secretary
Washington, D. C.

HARRY E. RADCLIFFE
Business Manager
Washington, D. C.

WILLIAM L. FINLEY
Director, Wild Life Conservation
Jennings Lodge, Ore.

DR. E. LAURENCE PALMER
Director, Nature Education
Cornell University, New York

RUSSELL T. EDWARDS
Director, Educational Publicity
Washington, D. C.

SCIENTIFIC CONSULTING BOARD

DR. LELAND O. HOWARD — Principal Entomologist, U. S. Bureau of Entomology
DR. WALDO L. SCHMITT — Curator of Marine Invertebrates, U. S. National Museum
DR. HARRY C. OBERHOLSER — Biologist, U. S. Biological Survey
HENRY O'MALLEY — U. S. Commissioner of Fisheries
C. W. GILMORE — Curator of Vertebrate Paleontology, U. S. National Museum
VERNON BAILEY — Chief Field Naturalist, U. S. Biological Survey
DR. PAUL BARTSCH — Curator of Mollusks, U. S. National Museum
DR. EDGAR T. WHERRY — Wild Flower Preservation Society
DR. T. GILBERT PEARSON — National Association Audubon Societies
DR. WILLIAM M. MANN — Director, National Zoological Park

NATURE MAGAZINE, PAST AND PRESENT, IS INDEXED IN THE READER'S GUIDE IN YOUR LIBRARY.

NATURE MAGAZINE is published monthly by the American Nature Association. Entered as second-class matter May 31, 1927, at the post office at Washington, D. C. Additional entry at Greenwich, Conn.

Publication and Editorial Office, 1214 16th Street, N. W. Washington, D. C. Additional Offices of Publication, Greenwich, Conn.

SUBSCRIBING MEMBERSHIP BLANK WILL BE FOUND IN THE BACK PAGES OF THE MAGAZINE.

A. B. McClanahan, Advertising Manager

ADVERTISING OFFICES

New York—Graybar Building
Washington, D. C.—1214 16th St.
Chicago—Palmolive Building
Los Angeles—Lincoln Bldg.
San Francisco—Hunter-Dulin Bldg.
Atlanta—Grant Bldg.

Copyright, 1931, by American Nature Association

Title Registered U. S. Patent Office

ANOTHER MILESTONE

An Editorial

WITH this issue Nature Magazine and its parent, the American Nature Association, enter upon the ninth year of their life. At such milestones it is well to consider past, present and future, and to assert our joint aims and ideals.

There is a simple strength to the terse statement of the object of the American Nature Association. It is "to stimulate public interest in every phase of Nature and the Out-of-doors", and as an integral part of the performance of that task the Association is "devoted to the practical conservation of the great natural resources of America."

Entering the field of conservation eight years ago, we were treading upon no hitherto unploughed ground—in fact, it was somewhat harrowed ground, to use the word in its figurative rather than its agricultural sense. Instead the difference and the *raison d'être* of our Association rested upon method. Which last concerns Nature Magazine.

Broadly, conservation up to the last ten years had found expression through limited groups of specially-interested individuals. In many cases they were organizations unaccustomed, and usually unwilling, to take the public into their confidence. There was universal failure to recognize that legislation depends upon public support, and, more important, that its enforcement must rise out of the popular will.

The American Nature Association proceeded upon a different theory. Its officers felt that real progress would come when public interest in things of the outdoors would demand conservation; that preservation of our native flora and fauna must be based upon an intelligent and widespread knowledge and appreciation of them. How to achieve this? Obviously through the presentation of the marvelous facts of Nature to the public in attractive, entertaining and authentic form—in such form as is Nature Magazine.

For some years Nature stories had been largely presented through the more lurid press. The phrase "Nature-faking", expressive of indignation, had issued from the White House. There was no recognized medium for presenting the record of the Outdoors, untinged by commercialism or the interests of special classes. Scientists of repute had largely withdrawn into their shells for fear of having the fascinating stories of their knowledge and discoveries garbled beyond all recognition.

This was the situation Nature Magazine found when it took its first uncertain steps into an untried field. A corps of able scientists whose faith in the possibilities of public education in natural history had not been totally destroyed were urged from their quietude. They consented to sit judgment upon our statements. A naturalist-consultant of outstanding ability, with opportunity to keep in close touch with the magazine in its making, was retained to make things doubly safe.

Since those days Nature Magazine has gone steadfastly forward. It has sought to inform and to entertain. In the treatment of a subject it has not tried to tell everything, but to present the essentials so attractively as to inspire further inquiry. It has sought to provide directions by which its readers would learn the way to the outdoors. It has endeavored to further other similar efforts at Nature education that have developed during the past several years. Its consistent objects have been to inspire affection for wild life; to teach that all living things have their place in a great scheme; to create a protective interest in wild and tamed plants; to stimulate a desire to know what swims in the waters, roams in the forests, flies in the air and rotates in the heavens.

Through the pages of Nature Magazine the influence of the American Nature Association has been expressed. They both plead the cause of forest protection and reforestation, of roadside beautification, of intelligent and harmless recreation, of preservation of national parks, and of many other phases of progressive conservation. The beauty and strength and esthetic value of our friends of the wild, and the inspiration that comes from their acquaintance, are emphasized.

That Nature Magazine is performing a service seems to be proved by its growth. The last decade has seen long strides forward to conservation. Nature Magazine feels that much of this can be attributed to the influence of an informed public. It likes to believe that it has contributed to that progress; that it may continue to serve in the future forward march of conservation.

"METSÉ AND PEPÉ MOCKING ME . . ."

BRANCH LIBRARY No. 23 C. P. L.

NATURE MAGAZINE

VOLUME 17 JANUARY 1931 NUMBER 1

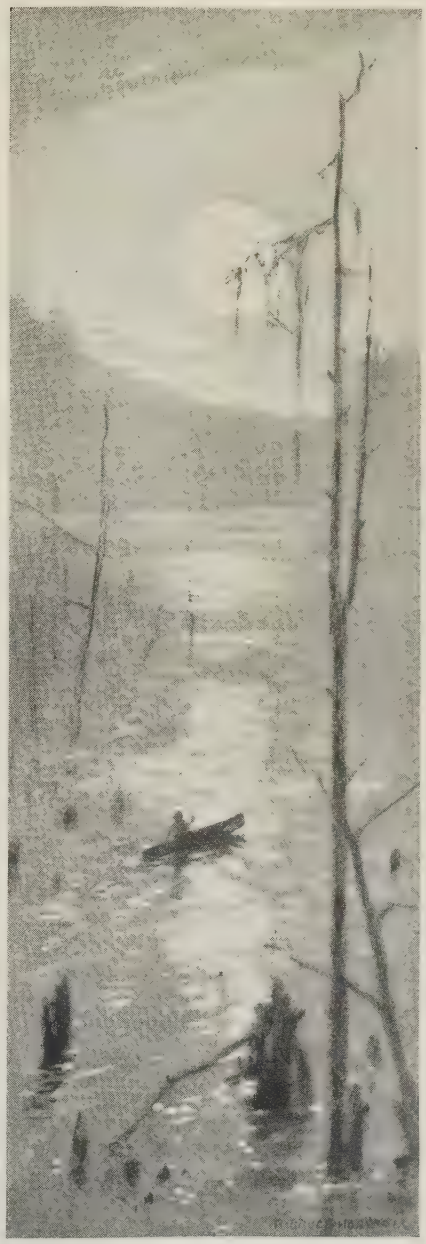
MY JUNGLE STUDY

BY DALLAS LORE SHARP

ILLUSTRATED BY R. BRUCE HORSFALL

IMAGINE a little "two by four" house on posts, well off the ground, perched at the peak of a steep ridge, some two hundred concrete steps above the boat landing, looking down upon the big ships moving through the Panama Canal, and looking out of its back windows upon a small crowded yard of animal cages and gay-leaved crotons and growing pineapples, palms, a mango tree in blossom, banana trees in fruit and papaya trees with green watermelons apparently coming out of their stems close up under their leafy crowns, and out of its end window, looking hard into the dense, dark wall of the jungle; then fill in with strange cries of bird and beast, and even stranger shapes of bird and beast, of twisting vine and giant leaf and spotted tree bole rocketing into pink, or gold or purple flower on the sky—and you may create the "atmosphere", or something of it, in which we live here at the biological laboratory on Barro Colorado Island in the Panamanian jungle.

My study! That is a euphemism, a bit of my worn-out vocabulary hanging over from bookish days and college classrooms back in the States. My study can have no windows, and no escape except by the door in which some one behind me has turned the key from the outside. Here I have pen and paper and a table pushed up against a big open window through which I see two tiny squirrel monkeys, marmosets,



"THE BIG, YELLOW DISK SWUNG UP OVER THE DISTANT HILLS"

Metsé and Pepé, mocking me for my pretense. I wish I could hand my pen to Pepé. What he could tell about the jungle, with Metsé to prompt and edit him! He hates me, the little imp, and bites me every time I stop to scratch Metsé as I pass. Metsé loves to be scratched, but my attentions make Pepé furious with jealousy. He hates all naturalists, for they invade his home jungle and keep him in a cage, a neat, commodious cage, with a little box for a bed, and burlap covers, and all the ripe banana and juicy papaya that he and Metsé can eat. He has Emesia to pet him, too, and he loves her, as almost any monkey or man would, for she is a native, and beautiful, and a cook, not a naturalist. I am Pepé's special aversion, and he bites me very particularly. So I catch him by the toe when he thrusts his paw through the wire at me, and hold him tight till he squeals; then he runs back to the box and sulks and chatters, while I scratch Metsé into something like a sleepy smile. Think of a *study* with two such monkeys in its window!

And in the cage next to the monkeys is a savage, black iguana, a lizard about three feet long that lives in the swamps, and with him, sometimes, two or three green and gold ones of a different species, just as long, with even a larger picket fin running the length of their spines, gorgeous, outrageously-shaped creatures, which have a way of quietly disappearing from the cage the day

before Emesia serves us "stewed chicken" for dinner. They are arboreal, feeding upon green leaves, and the natives call them "chicken of the tree". Very good, for the green and gold kind; but I have to keep a constant eye from my window on the lizard cage for fear I won't know when Emesia comes for this savage muddy old denizen of the swamp. I simply couldn't stomach him.

Next to the black iguana dwell three sloths, a large three-toed sloth and her wee, clinging baby, and two two-toed sloths, feeble-minded children of the jungle. I am not hypersensitive. Abnormalities, mental and physical, have neither horror nor fascination for me; yet, if I am ever to settle down with my pen here in the jungle, I must either board up this window or liberate these idiotic sloths. Still they certainly need to be caged and given this institutional care, for no such face as theirs could feed itself in confinement, to say nothing of making shift, unaided, in the competition of the jungle.

THE last trip that Dallas Lore Sharp made afield before passing from among us was to Barro Colorado Island in Gatun Lake, Canal Zone. In the accompanying essay based upon his stay at the biological laboratory there he paints a word picture of engrossing charm and delicate humor. We feel deeply privileged to present it in these pages and know that our readers will look forward to the second part of the essay coming in the February issue of Nature Magazine.

Then there are the two coatis, the 'possum-tailed raccoon, and the long-nosed, pigeon-toed, club-footed anteater in the other cages, all of them in my study window and so close that they might just as well be inside here with me, holding my pens and handing me paper. And there goes a bug man from the American Museum of Natural History into the woods with a net and a camera and a slide-rule and timing apparatus to spend the morning with his colony of leaf-cutter ants! I want to go with him and see the animals perform. And he is no man to be allowed to go off into the jungle alone, anyhow. When he comes to his agricultural ants he is very liable to sit absent-mindedly down upon some scorpion, or terrible centipede, or hairy black tarantula, thinking the spider a cushion, or not thinking at all, except about the agricultural ants. Ten to one he didn't chalk up on the slate which trail he was taking, and when he expected to return. But we all know where the ants are leaf-cutting, and that he won't come back until some one fetches him, not even for supper. And when we manage to get him at the table he will prop his feet high up under his chair somehow, and dropping his head upon his knees, begin about the ants, and forget all about supper. There are queer things in the jungle.

My study! My three-ringed circus rather! It is still early morning. We get out with the dawn here in the jungle, and already a Harvard botanist is in the yard preparing a movie background for a wild-life picture of our prehensile-tailed raccoon. I must lend him a hand. It is just as well, for I cannot concentrate while the mot-mots are crying, and the big guans, turkey-like birds, are screeching, and the parrots, blue-headed, green Amazons and little green parakeets, are racketing, and while in the morning medley, coming softly from far off in the forest, I hear the cooing of the black-billed wood pigeons. The toucans, and a liquid-throated cacique, have come in on the chorus, too, and the cotingas, and oropendulas, and the explosive little manakins. And there is Emesia with a great golden chunk of papaya for the monkeys that I could mob them for, in spite of the chunk I had for breakfast. I will wait for things to quiet down somewhat, though by ten o'clock I cannot write in my study, for my arms stick fast to the oil-cloth cover of the table, and when I try to move from my chair the chair tries to move with me.

If I turn hard about and shove my table up against the opposite window, then I am gazing down over Gatun Lake, the Panama Canal, and all the world in passing ships. This is worse than my former state. Three and a half miles of blue water wash up against this window, and, beyond the water, rise the green hills of the mainland ridge on the shoulders of receding ridges into dim Andean outlines running skyward toward the South Americas. That way the San Blas Indians live, and all manner of romance and idle dreams.

Close at hand, under the very windowsill, fall away, on right and left, two steep ravines, the sides of one planted to bananas, the other, with a few young lime trees on its brink, plunging into the jungle. The plot against me thickens. A plague on all study windows in the jungle, though I smother for want of air. How can I keep one eye upon my manuscript and let the other range up and down this wild ravine? Or listen with both ears to the sounds behind the leafy, liana arras so close to my window, and at the same time hear the sounds of my thinking, as one must when one writes?

Except for the wire screen, I could almost reach out and pluck the great leaves of the piper tree, and its curious, straight, upstanding, lead-pencil-like fruit. Beside it hangs a screen of beef-steak heliconia leaves, mighty things, nearly as long and broad as the leaves of the banana, with pendant slabs of thick, red flowers, reminding one of bloody, discolored cuts of beef, long exposed and stale. Spread like torn umbrellas over a decaying stump a huge-leaved aroid, *Anthurium,* flaps in the breeze; and overhead, weaving its large foliage into the thick, coarse curtain, and strangely figuring it with brown woolly pods and great cup-like flowers, stands a balsa tree. So runs the warp through the liana woof in the fabric that hangs, a waving wall, between my window and the jungle. But think of the hidden play on the stage and in the wings behind!

I caught a swift glimpse of it through my window yesterday. There had been a great shouting among the guans lately in the tall trees by the

landing. They would mount noisily to the tops of the trees, bow, and beat their wings, and squawk, then scale raucously across the inlet to the trees on the other side. If all this meant nesting, then the fool birds were publishing the news to pretty nearly the whole of the six square miles of the jungle. And there were plenty of ears in the jungle very keen to hear.

Yesterday there was tumult with the shouting, and wild alarm, and fight and murderous pain. Something was killing the guans, slowly, as if relishing the confusion, the horrid clamor, and the long-drawn alarm. We could really see nothing, but we knew that the white-faced monkey band had been in the neighborhood all afternoon, and where the white-faced monkeys are, there is bound to be trouble. You can't mix monkey with guan, nor with parrot, either, according to song and story, and expect peace. This morning Donato brought up from a nest at the landing four large guan eggs, a piece bitten out of each egg, and the inside of the shells licked clean.

The silly guan should take a lesson from the close-mouthed, secretive turkey hen who steals to her nest, approaching and leaving it so indirectly and casually that even the jealous, watchful gobbler has no inkling what's afoot. Yet a turkey gobbler is a bigger fool than the guan. The white-faced monkey is a different customer; there is nothing afoot in the jungle that could fool him.

"THERE HAD BEEN A GREAT SHOUTING AMONG THE GUANS LATELY IN THE TALL TREES BY THE LANDING"

So they put me inside all these windows to write! Bunyan was luckier when he was put inside Bedford jail. He may have had a window in his cell, but it certainly did not make on so many monkeys and ships and queer scientists as these of mine. The city editor of a metropolitan newspaper might grind out copy here, bred as he is to bedlam; but not if he had been born and brought up in the woods as I was, where he never had his fill of hurdy-gurdy and panhandling monkeys in red fez and blue roundabouts with brass buttons. But here the monkeys don't doff their caps nor get yanked by their chains when the taste of the dirty copper cents puckers their little faces till their canines show. They don't wear chains in this jungle; but they leer and jabber at you, and make all the ugly faces they are capable of—and they have a mighty good line of ugly faces! This whole island is a big monkey house. There are three species to make faces at you by day—the black howlers, the white-faced Capuchins, and the tiny squirrel monkeys, or marmosets; and one by night, *Aotus zonalis*, the woolly night monkey, big-eyed, solemn-faced, slow, blinky, and really sweet by day. But at night—well, nobody has ever seen one, probably, face to face at night, so nobody knows, except that everything, even a bunch of bananas, can make a horrid face at night in the jungle.

We don't sit around the laboratory shivering and holding hands at night on account of the ugly faces leering in at us through the screening. Once in a while, after the lamp is lighted, a cockroach, a big dangerous one, the size of your hand, will smash up against the wire and fall with a flop outside. But you can be sure that there is a cockroach man here, to go quietly out and pick the gruesome creature up, and tell you, rather tenderly, what a wonderful specimen it is, and that he would like a thousand or two of them, and won't you save him all you run across in your rambles, bringing them home without hurt in your pockets, or better, in your bosom.

Long on sentiment, this group of scientists on Barro Colorado Island is quite inhumanly short on fear.

But then there is nothing much to fear. You might step on a poisonous serpent, only no one ever has on the Island, and only a single deadly specimen has ever been found here. The peccaries might attack you, but they are not in the habit of it, and you are always near a tree, not always near one easy to climb, however, and you must look out for that. You might get lost, though not hopelessly lost on an island hardly more than three miles across. Besides, a slate hangs outside the back door of the laboratory, and it behooves you, if you are bent on getting lost, to put on the slate, as you are always supposed to, the name of the trail you are taking, when you are intending to get back, and where we are to look for you when you succeed in getting yourself well lost.

Queer things can happen, however. About seven o'clock one night, in the full of the moon, the botanist was seized with a romantic turn,—not seized really, for the fever had been working in him for many days. He had fashioned himself a long alligator harpoon and a beautiful cayuca paddle against this full of the moon, and as the big, yellow disk swung up above the distant hills, flooding the lake, he pushed off alone in the hollow-log canoe for a long paddle around the Island to the cabin at the end of Drayton Trail.

His course took him for a short distance into the channel of the canal, but for the rest of the way he must steer through a submerged forest, some of whose spectral trees were still standing, though most of them had rotted and had been broken off by the wind just below the surface of the water. They cannot be seen even in the daylight, and one must work his skittish, soft-bottomed cayuca cautiously among them for fear of punching a hole through it. To drive hard upon one of these stubs at night would be to fill in the gruesome waters and sink like a stone. But there is no gainsaying the tropic moon, not when it is full, and one is in one's foolish forties.

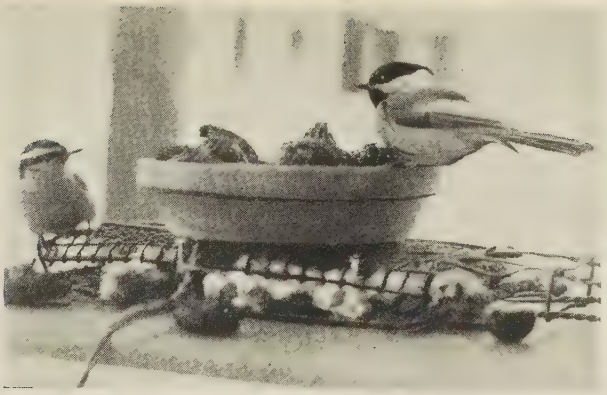
With much misgiving, we watched the botanist fade away in the moonlight. I had made this trip to Drayton House a few days before in a small motor boat with the pilot who had himself staked out the channel, and I marked his anxiety and the difficulty he had in following it. But the botanist had spent several months upon the Island and knew its trails, as well as its twenty-five miles of shore line, thoroughly.

The next day, Sunday, late in the afternoon, he appeared at the laboratory without the cayuca, walking in from the trails, his machete flapping at his belt. He looked tired. No one of us had ever seen him tired before, and had he brought back the cayuca we should never have heard his story. He evidently had had a solemn Sabbath for a scientist.

He reached Drayton that night near twelve o'clock, and the next day paddled on around, exploring the sunken forest and inlets of the Island, until, well out from shore, he struck an unseen stump and stove a big hole forward in the thin, soft bottom of the cayuca. It was too large to stuff with coat or shirt, but, by sitting far back on the point of the stern, he could tilt the leaking bow partly out of the water, and by swift, hard work, he reckoned he might drive the sinking craft to shore.

He went down in waist-deep water among impenetrable bamboo and tangled lianas, having to hack a way through so as to drag the cayuca up to the edge of the land. He thought he had passed the inlet at the end of a well-known trail on that side of the Island; so, consulting his compass, he took his bearings and began to cut his way straight through the jungle for the nearest trail. He was the only one of us who regularly carried a machete, his botanizing generally (Continued on page 57)

"THE GREAT CATS COME OUT ON THE TRAILS AND THEN GET THEIR PICTURES TAKEN"



A QUESTION OF PROPERTY RIGHTS
The chickadee seems to look askance at the presence of the red-breasted nuthatch

NOT TOO FRIENDLY CALLERS
First come, first served—but can an early arrival keep off later visitors?

TRUSTING TUFTED TITMOUSE
He hasn't even ruffled his crest, so sure is he of the hand that feeds him

BIRDS OF THE BREAD LINE

THEY BRING DRAMA AND ROMANCE TO THE WINDOW

BY FANNIE HOYT

ILLUSTRATIONS BY THE AUTHOR

I HAVE definite ideas of what I am going to do when I get old enough to retire. One thing is to sit, many winter days, by a big window outside of which birds gather at well-stocked feeding stands. And I expect to have the time of my life.

During the past several winters, I have learned the enjoyment a feeding station can give, even though one has time for only an occasional glance at the activity going on there. The woodpeckers, tufted titmice, chickadees and others of the great bird breadline hold daily circus performances for my benefit, and exhibit so much of their bird nature that I get to know them as I know my family. Many of them—the titmice and the chickadees—give me their confidence to the extent of feeding from my hand—and that is a thrill well worth all the food put out. They are rare entertainers—these little sprites.

Perhaps the greatest satisfaction, however, comes from realizing that my station is helping at least a few birds through the winter. Civilization has not been kind to birds selecting the North for their winter headquarters, for it has destroyed with the forests many food sources. When heavy snows fall or sleet storms crust the surface of the ground, it is practically impossible for the birds to find sustenance in open places. With no sheltering, thick-growing trees for protection against the icy blasts, most species are hard put to it to withstand the cold. And to see the little fellows squabbling and gulping around the feeding stand of a sub-zero morning just after a snowfall is to realize that you have, in some measure, fulfilled human responsibility toward the small creatures of the air.

SURPRISED
Titmouse ruffs his top-piece at the camera

With fewer species about, a feeding station in winter offers excellent opportunity to study thoroughly a limited number of birds. Their hearty appetites breed confidence, and one can generally get much closer to them than at any other time of the year.

My feeding stations are placed at two west windows. One is a box about a foot square, with the open side toward the window, which is only a foot distant. Every move of the birds can be watched, especially when they come down to the movable tray on which a supply of nuts furnishes an ever-ready bribe.

By setting my camera on a ledge extending from one of the windows, and running the shutter release and bulb under the sash, I can capture on the plate nearly every pose I wish.

TIMID HAIRY DINES
The biggest of all, he was the shyest

There is no limit to the humorous and dramatic events which take place at a feeding station. Almost human seem some of the actions of the little creatures. Each one is a distinct individual, recognizable after a little study, and with a different intelligence, manner and personality from those of his co-consumers.

My feeding station is supplied with suet, black walnuts and butternuts. The woodpeckers eat the suet, but the chickadees, tufted titmice and the nuthatches rarely touch this dish unless they have exhausted the nut supply. Chickadees are particularly fond of butternuts, but the titmice will deliberately toss them aside for walnuts if they have a choice. Downy and hairy woodpeckers do not seem to have the sense of investigation that the other birds possess, and though they eat nuts when they find them, they usually go, perhaps by force of habit, to the suet cage which is usually on a shelf most convenient for them.

The titmouse has excellent table manners, but when it comes to a question of himself or some other bird, he never holds back. He is the autocrat of the automat, so to speak, and even the dominating white-breasted nuthatch shows deference to this nifty, crested neighbor. The hairy woodpecker, of course, is duly respected by all the visitors, for they seem to stand in awe of his size, but like so many big country boys, his proportions do not imbue him with courage and he is the shyest patron at the feeding station. Downy, too, is very hesitant and unassertive. The chickadees are a bossy crew. Several individuals lord it over the rest of the clan without mercy. If any parts of the kernels of the nuts set out for the birds fall out of the cracked shells, the chickadees are sure to take the largest pieces.

It is especially interesting to watch the birds on a morning when the weather is sub-zero. Nuthatch was not reared to use his toes to hold his food, so he can sit on his feet and keep them warm while he eats his breakfast. Chickadee and tufted titmouse have, however, much better manners, although their habits are much less convenient when snow is on the ground. They just nibble their food, holding it on a branch or the edge of the tray with their toes. Every so often they must stop eating and sit on their feet to warm them again.

The times of greatest activity at the feeding stations are in the fall, when the birds arrive from the North, and in the spring, which sends them feverishly courting a mate. Many are wise enough to nest within easy reach of the food I put out for them, and thus let me study their home behavior.

HOLDING THE FORT
Chickadee knows there are nuts in the carton

On two different occasions a pair of chickadees decided to locate less than a block away. The first nest was just across the street from the station, to which the birds repaired greedily every few hours. Both times a hole in a decayed branch of a maple seemed to suit their needs, but the second home was lost to them. When they were, to all appear-

HOW THESE PHOTOGRAPHS WERE TAKEN
The shutter release went under the window, and the operator watched from inside for the proper pose, then snapped the bulb

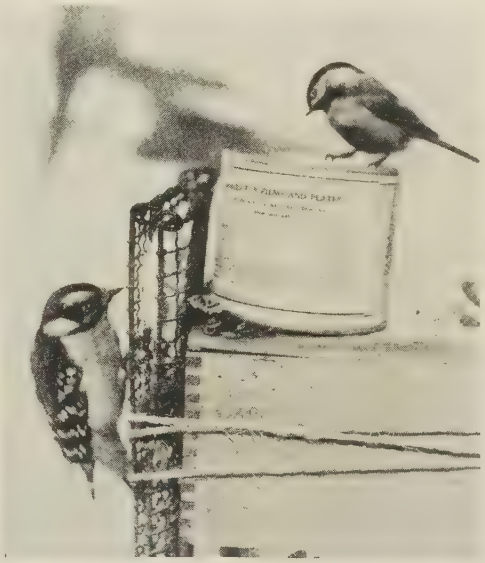
ances, well established and progressing satisfactorily, a red headed woodpecker with his own ideas of property rights came along and evicted the tenants.

The mating habits of the chickadees furnished considerable enjoyment to those who watched them through our window. During the winter, it is a rare occasion when two chickadees eat together at a tray. But when spring approaches, the attention paid the females becomes ludicrous in comparison. The male may be heard calling "Sweet-ie" from morning to night, and seen taking choice bits of food to his lady love. She forgets the winter insults and helps him find a place to live. But they do not seem to get along as smoothly as the other couples. They go "up in the air", literally and figuratively, at the least provocation, and not infrequently bump their heads, with a noticeable thump, against the window pane. Their daily companions, the titmice, seem to have no altercations, however, and perfect amity exists within their family ranks.

While white-breasted nuthatches are common at the cafeteria, none of the red-breasted variety appeared until last year. The one who visited us was an adorable little fellow, always amiable, and not easily frightened. No matter how rough the weather, he was one of the first of the family to appear for breakfast, and continued his visits until after a heavy snow storm in May.

Tufted titmice, chickadees and nuthatches are versatile vocalists, and their different calls often dupe those listening for the return of the southern migrants. In spring, before the robins return, a white-breasted nuthatch will sing their song for them, giving a fair imitation. The "Sweet-ie" of the chickadee is often mistaken for the cry of the phoebe. In the early season the titmouse utters the finest lisping note, and when alarmed, his crest becomes erect and he scolds like a jay. Later, when spring days arrive, and he really sings from some tree top, the entire neighborhood may listen and give thanks for his sweetness.

"DELICIOUS"
The berry-box supply appeals to the chickadee



"KEEP TO YOUR OWN DIET"
A chickadee dines on nuts while a timid downy woodpecker feasts on suet

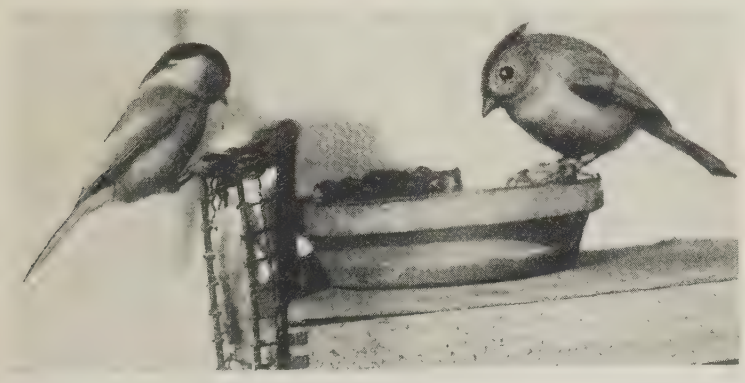
If one wants excitement, drama, romance and studies in psychology, all that is needed is a box, some suet, some nuts and a convenient window ledge. Hour after hour, the birds come and go. Each time they reveal some new secret about themselves; each time they show some quirk of disposition that recalls human traits. One need not tramp the fields or hills to study the winter birds—they will come to you, driven by hunger, and pay for their keep.

A bird feeding station offers excellent opportunity for the bird-bander. The feathered guests are usually unafraid and friendly, and hampered but little by the metal rings. It is interesting to check the number that return each year to the same spot, though in the interim they may have travelled thousands of miles. The high percentage of second year callers is amazing to humans who have to travel by road maps.

PENSIVELY POSED
A white-breasted nuthatch thinks about his latest meal

My friends were much amused, last winter, by a pair of titmice I had banded the year before. A most happy couple they were when they patronized my cafeteria—separation seemed almost impossible. Yet in the latter part of December, the banded female returned with an unbanded mate, to garner my nuts once more, while the male, also with a new mate, patronized a feeding station about two miles distant! Such are the vagaries of bird-domesticity.

Yes, when I retire, I'll want to be by the window, where life in all its ramifications passes each hour in review, where I sit by the side of the road birds travel, and be a friend, not only to man, but to the multitudes of feathered specks man has too often forgotten in carving out a future for himself.

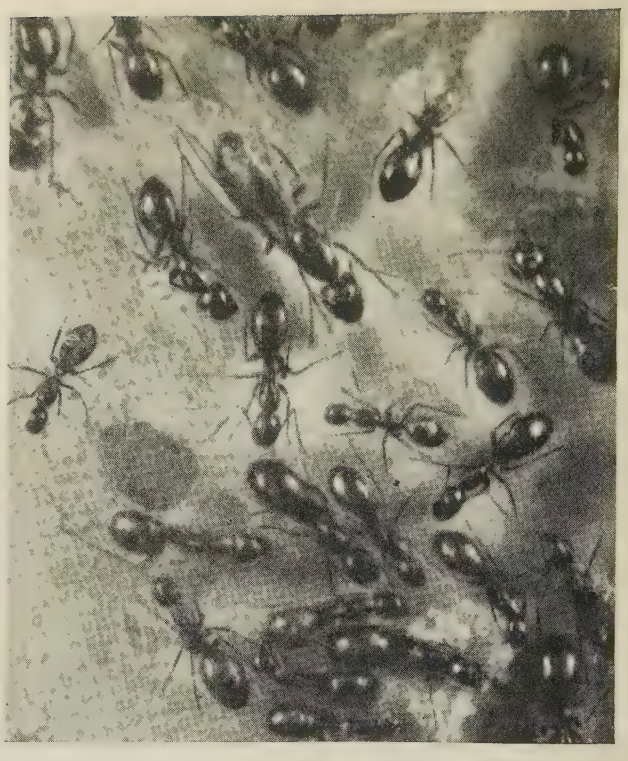


GRACE BEFORE THE EVENING MEAL
In prayerful attitude the chickadee and titmouse gaze on the food the author has provided

CONSIDER THE ANT

AND MANY ENJOYABLE HOURS ARE IN STORE

BY CARYL PARKER HASKINS

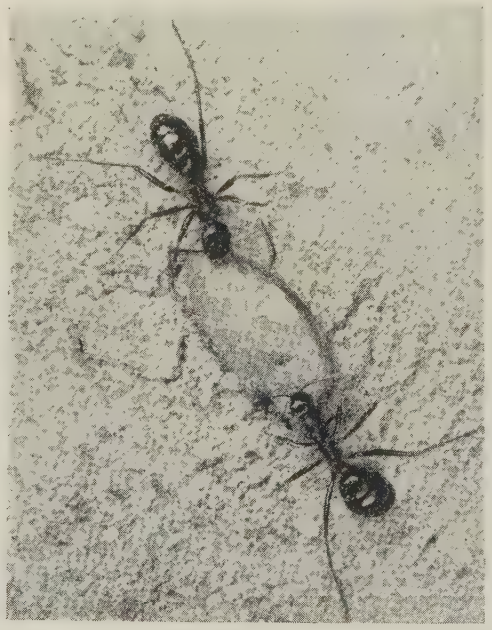


GIANTS OF THE SUNNY HILLS

Bronze, nocturnal specimens of Campanotus americanus. The winged individual is a queen

"Go to the ant, thou sluggard; consider her ways, and be wise." So spoke Solomon, doubtless gazing, as he mused, at the returning column of some Old World seed-harvester, perhaps a species of the stolid and powerful genus, *Messor*.

Like many another saying of the great sage, this word was perhaps better and more profound than he knew. Only we of today, equipped with that wider knowledge of our earth and the things of our earth which our civilization has brought to us, can comprehend or appreciate in the slightest degree the profundity of observation of a naturalist who, from our own standpoint, was hopelessly handicapped. For man has never ceased, since the days of Solomon, to consider the ant. Sometimes he has collected fat thief-ant queens to roast for food, sometimes he has hastily evacuated his dwelling as a column of the malicious Drivers swung toward it, and given thanks to his own particular Deity to be left in peace in his retreat, and to find his dwelling well rid of vermin when he returned. Sometimes, in the southwestern deserts of North America, he has tied his captives of war to the mounds of the great New World harvesters, who, properly resentful at the intrusion of their dwellings, accomplished the torture of the unfortunates far more terribly than their captor could have done. Sometimes he has fought the columns of the South American fungus-growers as they returned from his ruined orchards, a ghostly horde in the moonlight, each bearing a leaf-banner triumphantly aloft. Sometimes —and this of later date—he has sought to exterminate the small but audacious species to whom he has acted both as carrier and temporary host, as they followed him in his ships and in his overland conveyances to the ends of the Earth, craftily waiting until his advent had weakened their own native competitors before abandoning their unwilling benefactor to lead an independent existence in a foreign land, in which they quickly adapted themselves.



CORNELIA CLARKE

CARING FOR THE FUTURE

Nurses are carrying a cocoon containing chrysalis to spot suitable for its development

But Man's most recent consideration of the ant has been of quite a different character, and reflects both the height and the comparative dominance of his own latter-day civilization. Consider the ant as a household pet.

Save for the old toad who lives in the hole near the cellar and sallies out evening after evening, summer after summer, to earn his nightly meal, or the camp frog who meets one without fail each year to assure him that his welcome to the lake is warm, there is no cold-blooded animal known that may gain a greater share of regard. The single ant, whatever may be its species, becomes intensely individualistic when treated simply and purely as a pet, with its confidence thoroughly won—to speak anthropomorphically but not incorrectly. In this capacity it occupies a place comparable to the single guppy, the single finch or toucan, pangolin, snake, lizard, or newt, though superior to any of these for the city dwelling, because necessitating less care, and requiring infinitely less room.

The true naturalist, however, seems perpetually unable to be satisfied with the single individual. The intimate touch which he is able to maintain with his friend is heavily compensated by the complete alteration of that

VISIBLE FOR CLOSE STUDY

A colony of Formica subsericea exists under glass where it can be watched. The larger individuals are queens

Mr. Haskins has made a deep study of ants and is the author of a monograph on this subject. Accompanied by his mother, he was a member of the 1930 Nature Magazine parties in the Yellowstone and Jasper Park, following which he flew to Barro Colorado Island, in the Canal Zone, bringing back some new ant pets for study.

friend's habits, the completely abnormal life which it shortly takes up in response to its new environment. That alteration is not a happy spectacle. The crowd is better, for, if the naturalist cannot maintain as close a touch as with the individual, he is privileged to see that individual more nearly as it really is, living in intercourse more or less intimate with others of its own kind.

If one seeks the ant colony purely as a pet and a friend, no species can be more fascinating than the common red ant of the garden, *Lasius americanus,* or the common black *Formica subsericea,* that is such a frequent runner of pavements and dweller of the fields in the Northeast. No ants will more readily adapt themselves to a restricted, indoor existence. Both are readily obtainable almost anywhere in the North, but they are to be sought most conveniently, perhaps, under wayside stones. The blacks keep a number of queens in each good-sized colony, and any of these, taken with a few workers and young, and, perhaps, some of the fat little red beetles of the genus *Hetaerius,* which frequently live with them, will complete an assemblage of absorbing interest and will furnish lively enjoyment.

CORNELIA CLARKE

ANT INDUSTRY AND STRENGTH

A worker brings home a large hornet. An ant can move objects which scaled to human size would weigh 240,000 pounds

The colony taken, nothing can be simpler than the construction of a suitable nest, wherein every movement of the occupants may be observed. Lubbock, Janet and Miss Fielde have all devised excellent, and sometimes very elegant, types of nests, enjoyed by the ants, and permitting perfect and extended observation. They are all readily to be constructed, and the designers have all published explanations of them.

No such elaborate preparation is necessary for the pets, however, if it be not desired. A most excellent nest may be assembled in ten minutes from no more formidable raw materials than two small panes of glass, a handful of sifted moist earth, and a roll of glass-adhesive tape. The earth may be spread on one pane to a depth slightly exceeding the stature of the queen, the second pane laid on it, and pressed down, and the whole bound about the edges with the tape. If this rough nest be then placed in a box, an entrance made to it, the box covered so as to prevent the escape of the ants, and the newly-caught colony, with its earth, its larvae, and its pets, thrown into it, the ants will within a few hours excavate chambers and galleries in the new home, dumping the earth in the box, and move in *en masse,* taking all their entourage with them.

Within a few days they will be perfectly content to be left utterly alone, for weeks, if need be—yet ready every hour of the day or night, when once accustomed to light in their nest, to welcome the observer. Colonies have lived with me for years in this sort of nest, and have become so attached to them that, when new ones were offered, these were rarely accepted unless the tenants were forced to move. Nor is this degree of preparation necessary. A large colony of our tiny thief-ant, *Solenopsis molesta,* has long lived contentedly, and without care, in a two-drachm pill-vial lying on my table. The tiny ants have cut a passage-way through the cork, and come and go at their pleasure on foraging expeditions, hardly visible as they move across the table on their journeys.

To one who is of a turn of mind to which romance or exploration, or their combined product, scientific inquiry, appeals, the ant presents an inexhaustible wealth of delight. Should one have longed to live in the midst of a primitive society, he may literally find one in the Ponerine ants of the North—dwellers of the damp sun-flecked soil of our deep woods, and shunners of light. They live their lives entirely underground, save for the flying queens and males, but may be seen in midsummer cautiously warming their young under the coolest and dampest of stones. While the larvae lie neglected in the brood-chamber, the queens work as do the workers, for the colonies may number but ten or a dozen individuals all told. The members fight among themselves for the spoil scattered half-dissected on the floor, as the first humans fought in the early days of man's existence.

And there await the exploration of the first comer the slave-makers of the *Formica sanguinea* group; the rare and beautiful, half-parasitic warriors, *Polyergus lucidus;* the thief-ants, *Solenopsis molesta,* living often between the walls of larger ants, and pilfering their brood; the smaller species of *Camponotus,* dwelling high in the branches, and foraging in the windy tree-tops; *Colobopsis etiolata,* dwelling in empty galls, with a caste specialized to the function of doorman, that the entrance may not be seen; *Leptothorax emersoni,* dwelling in company with the larger *Myrmica canadensis,* and acting as masseuse to its host; *Pheidole pilifera,* its tiny workers bringing grass-seeds to its nest to store, and for the huge-headed soldiers to crush; the red species of *Aphaenogaster,* living their early colonial lives as unwanted guests in the home of a darker cousin; *Crematogaster lineolata,* constructing innumerable sheds over its droves of aphids and coccids, and building little way-stations along its well-marked road; *Prenolepis imparis,* sheltering below ground its honey-filled individuals who lead a relatively inactive life, but become larders in times of famine.

The ant likewise offers to him who chooses to avail himself of them a wealth of sociological, ethnological, and biological problems. What is the tie which binds the advanced ant-guest or pet—a vicious parasite in attractive garb—to its host, and enables it to exploit every instinct of its benefactor, while destroying the very brood of its host? What is the marvelous instinct whereby a parasitic young queen may persuade the workers of the host species to assassinate their own queen in her favor? At what time—certainly in pre-Oligocene years—did the true ant first split from the stock of its mysterious, subterranean, wasp-like ancestor? How did the ant first come to America, supposing it to have originated to the eastward, and where and when were the great Five Civilizations developed? What is the biological secret of the castes, and of their subsequent discarding in the highest ants, until only queen, male and single worker-form are left? What is the chemical metabolism of the wing-muscles of the isolated queen, whereby fat is made available to nourish herself and her first brood? What is the secret of the curious mixed-caste forms which sometimes appear in the nests—half queen, half male, or half male, half worker? What is the nature of the ant conversation, which, fixed and elemental though it be, certainly occurs—half a language of symbol, half of sound? These and a score of other fascinating questions present themselves in the commonest ant. None of them has been completely solved.

The metropolis of ant life does not lie in our northern states, nor in the great industrial regions of Man. But far into the North, and throughout the whole world, save at the poles, on the highest mountain-tops and in the most arid deserts, the land holds in the ants which dwell there a grain of romance as great, and as true, as that offered by Ur, or the Tombs of the Kings, by the Dragon Lands of Komodo, or the reaches of the upper Amazon. That romance can be exploited, and enjoyed every day and to the very full by those of us who must remain at home.

FOXY FEEDERS

THEY BEHAVE WELL

BY

MRS. V. H. WILSON

SPEAKING of table manners, if you wish to know the latest mode, just watch my fox pups at their meals. They are on their best behavior in the photograph, but even at other times, they are too polite to put their elbows on the table. Foxes make excellent pets, and are affectionate, intelligent and interesting, and both the blue and the silver foxes I possess give me a great deal of enjoyment.

Foxes are among the shyest of our wild animals, but with kind treatment they share with their kin, the dog, his outstanding traits.

COURTESY OF FREDERICK G. R. ROTH

FREDERICK G. R. ROTH'S "LION" AT BAKER'S FIELD
This symbol of Columbia University, executed by one of America's foremost animal sculptors, was presented by the class of 1899

AMERICAN SCULPTORS OF WILD LIFE

THEY HAVE CAUGHT THE BEAUTY OF BIRD AND BEAST

BY DOROTHY PLETCHER

THE portrayal of American wild life in sculpture is a comparatively new factor in the art of this country. In 1920 the American Society of Animal Painters and Sculptors was organized, and although it is now no longer in existence, its influence was extraordinary and the work of its individual members has continued with increasing proficiency until today they are famed throughout the world. With a glimpse into the realm of animal delineation the layman is always impressed by the wholehearted enthusiasm of these "animaliers" for their work; and this earnestness is undoubtedly due to the fact that they regard animals with the absorbed interest of naturalists.

Walter Winans, an animal sculptor writing on the exacting nature of modelling wild life, says: "Each species of animal is not only differently proportioned and endowed with a different shape, but has different habits and ideas. What would be quite a correct subject and pose for a badger would be quite wrong for a sheep. . . . With animals, if there is a characteristic pose peculiar to that animal, that pose is generally the best to use. . . . This choice of the correct pose for the species is one of the secrets of good animal artists." A thought to be remembered.

Surprising as it may seem, the portrayal of our wild life is of fairly recent origin, for according to Lorado Taft, "there is record of just two native animals sculptured in the United States before Edward Kemeys began his work."

When he was thirteen years old Edward Kemeys had his first trip West—and from that time on he couldn't forget the strange wildness of that country in the fifties, the beauty of the abundant wild life he saw there. And then one day, about seven years later, after he had returned to New York from serving in the Civil War, he saw a sculptor modelling a wolf's head, and he announced abruptly, "I can do that!" Need we add that the sculptor laughed heartily? But Kemeys produced a beautifully modelled head that same day—it was his turn to laugh. America's pioneer animal sculptor was launched on his famous career!

Sculptors repeatedly point out that Kemeys was always more interested in the animals themselves than in their interpretation. Yes, that is true. But his was a case of an enthusiast of the outdoors turned sculptor. Although he never had an hour's instruction in sculpture from anyone, he had always studied animals. "I knew the facts," he

COURTESY OF ELI HARVEY

AN AFRICAN ELEPHANT, SCENTING DANGER

The work of Eli Harvey, who is, however, best known for his presentations of the cat family

once told Hamlin Garland. "I knew the skeletons and the muscles of animals. . . . I always had an intuitive conception of what animals would do under certain circumstances. . . . I knew nothing about conventional composition, but I could see my subjects, every gesture, intuitively. . . . I went to the heart's core of our American wilderness, and it yielded up its most carefully guarded secrets to me."

Kemeys is an important figure in American art, not only because of his own extraordinary work, but because he blazed the way for animal sculpture in this country. The rugged quality of his art may be explained by his accounts of journeys through the West which picture him at night at the campfire studying and eagerly sketching all sorts of animals brought him by the Indians. Some of his best known works are "Still Hunt" in Central Park, New York, "Wolves" in Fairmount Park, Philadelphia, and his "Lions" in front of the Chicago Art Institute.

The World's Fair at Chicago is noteworthy because it brought A. Phimister Proctor before the public eye. Mr. Proctor had shown artistic tendencies even at the tender age of five when his family moved from Canada to Iowa and thence to Denver, where the embryo wild-life sculptor revelled in consorting with elk and bear in the wild exclusiveness of the great Rockies. Hunting and studies of animals filled his boyhood days and his sketch books. And so it was natural that after the years of close observation of wild animals had been aided a bit by study in 1887 at the National Academy of Design in New York and by five years in Paris, he was ready for eminence in a field of art strangely new to this country.

His output of masterpieces is prolific. The public parks and bridges in all of our big cities proudly display his handiwork. His famous "Panthers" at Prospect Park, Brooklyn, New York, "Tigers" at Princeton University, "Lions" on the McKinley Monument in Buffalo, and his "Bison" and "Tigers" on bridges in Washington, D. C., are a few of the outstanding ones.

The colossal bison—four of them—sentinels at each corner of the Q Street Bridge in Washington, have about them a sense of strength and power coupled with an alertness and agility and suggestion of action that makes them appear magnificently alive.

All the elasticity of the feline species is apparent in his "Striding Panther" of the long, lean strides, an extraordinary revelation of this beast in all its wiry, sinewy craftiness. The unusual attitude of the "Panthers" with uplifted heads, at Prospect Park, is one that Mr. Proctor says he has often observed in a startled animal.

COURTESY OF U. S. NAT'L GALLERY OF ART

ONE OF A MASTER'S BEST

"The Still Hunt", in Central Park, New York City, typifies the art of Edward Kemeys, the "father" of American animal sculpture

Probably the world's greatest woman sculptor of today is Anna Vaughn Hyatt Huntington. High honors have come to her from both sides of the Atlantic. The fact that her father was one of our eminent zoologists may have had something

to do with her passion for studying animals; they attracted her when a tiny girl, her family testifying to her astounding recklessness in attempting to acquire first-hand information on the working of a horse's jaws and the like. Domestic animals first engaged her attention, but could not hold a dynamic nature such as hers; she deserted them for wild life models, and straightway transferred her observations from the farm to the zoo.

She turns at times to modelling the human figure and her internationally famed equestrian statue of Joan of Arc on Riverside Drive in New York City is evidence of her skill in this realm; but it is for her contribution to American wild life sculpture that her name will live.

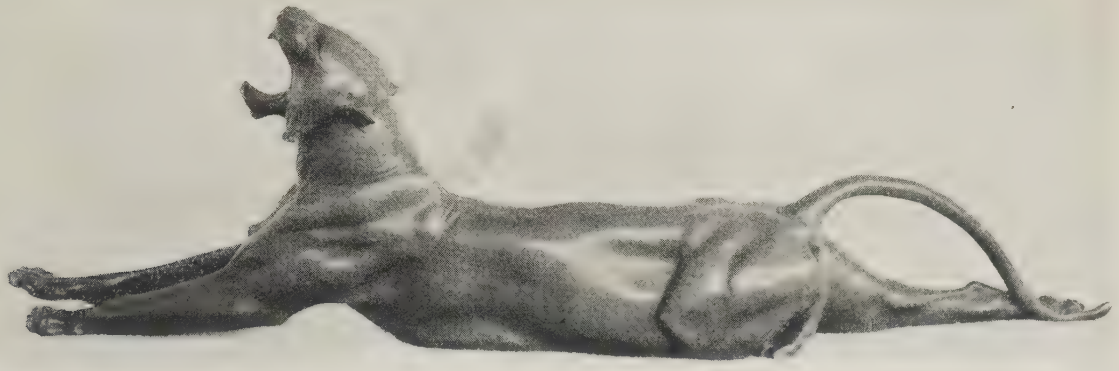
The intangible quality of her work suggests true genius, for one comprehends the picturesqueness of animals as never before when they are seen through her eyes. In the flowing, rhythmic line of her beasts one instantly notes potential force, characteristic stealth, and an amazing suppleness. Mrs. Huntington's amusing bears and cubs, her "Yawning Tiger", her "Lion" at the Dayton High School, her "Jaguar and Crane"—to mention only several of her many works—take us through the gamut of emotions of the animal kingdom she has closely studied.

COURTESY OF ALBERT LAESSLE

THE PROUD "PENGUINS," BY ALBERT LAESSLE

One of the best known pieces of a workman distinguished for his studies of smaller animals

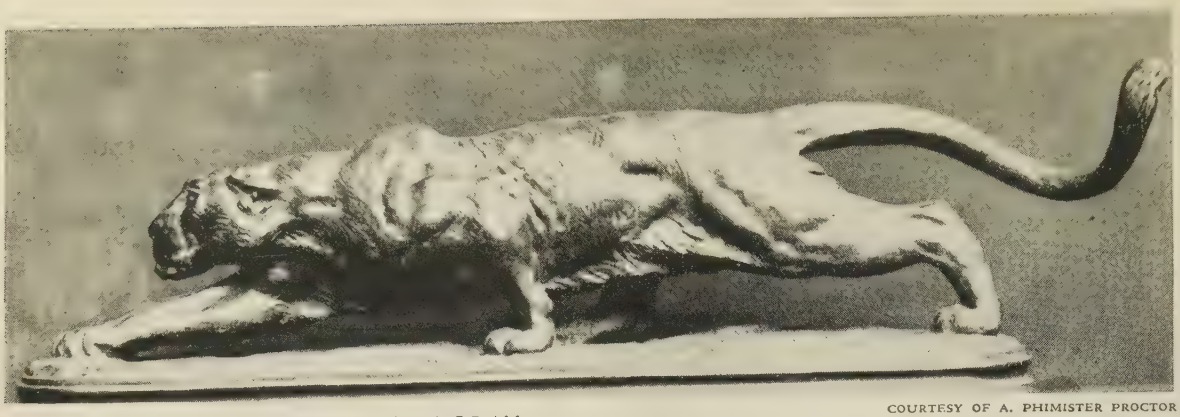
The story of the late Arthur Putnam who struggled defiantly against numerous obstacles, and finally gained recognition in his chosen field, is nothing short of dramatic. While yet in his "teens" he worked on Mississippi River boats, but left this for ranch life in California where he became acquainted with Gutzon Borglum. Then followed modelling in San Francisco, but being in need of further knowledge of animal anatomy as well as money, he worked in the stockyards. His eager, talented study of animals progressed uninterruptedly, and one fine day he and his wife found themselves in Paris where he exhibited several small sculptures at the Salon. Here fate was supremely kind. A French artist became intensely interested in the young American's work, telling him



COURTESY OF THE AMERICAN FEDERATION OF ARTS

AS WELL KNOWN AS HER EQUESTRIAN STATUE OF JOAN OF ARC

Mrs. Anna Vaughn Hyatt Huntington turned to the field of Nature to achieve one of her greatest successes, "The Yawning Tiger"



COURTESY OF A. PHIMISTER PROCTOR

ONE OF THE MOST REALISTIC WORKS OF ALL

A. Phimister Proctor's "Striding Panther" marks the sculptor as among the greatest in America. He made his studies in the wild

wishfully that he wanted to buy it but couldn't afford to; Putnam made him a present of one of the exhibited pieces; Loie Fuller, the dancer, when visiting the painter's studio, saw Putnam's work and described it to Mrs. Alma de Bretteville Spreckles—the fairy godmother in the story—and she had all of Putnam's models cast in bronze so that now you and I may see his ninety bronzes of cruel lynx, cunning coyote, delightful bears and other species in the California Art Gallery of the Legion of Honor in San Francisco.

No one understands the value of using the typical pose for a certain species—simply that and nothing more—better than Putnam; in this wisdom it would seem that he has surpassed even the great French sculptor, Barye, the interest of whose masterpieces centers around the portrayal of dramatic incidents. Putnam's sculpture is called "impressionistic", but it is rather a modified, curbed impressionism. In this way his interpretation of the poses, to our wonder, makes the animal more of an actuality than an exact delineation could possibly do, although in the last analysis it proves to be quite removed from the actual fact.

From his awkward cub and keenly attuned "Coyote", one may readily see the use of the typical attitude. Likewise are his supple-muscled "Panther", his powerful "Trained Bear" and his crafty "Lynx in Repose" the best testimony possible for Putnam's genius.

At Baker's Field, Columbia University, is one of the most realistically sculptured lions you've ever beheld. The class of 1899 presented it as the symbol of Columbia to the university several years ago. Frederick G. R. Roth of Englewood, New Jersey, is the sculptor, and he really needs no introduction.

In his very early days he delighted in making bronze statuettes—studies of extraordinary kinds of action where he depicted large animals balancing themselves precariously. Like Barye, he fancied a conflict now and then, and in "The Combat" we witness a terrible struggle between a rhinoceros and an elephant.

Recently, when I asked him to tell me something about the difficulties of animal sculpture, he replied: "In my opinion there is little difference in working from an animal or human model; the underlying essentials are the same. If possible the animal requires a closer observation and a very sound conception of its structure to reproduce a certain emotion or phase of movement. It is very difficult and often impossible to induce an animal to repeat a pose, and the artist is limited to taking mental snapshots, so to speak. In regard to the work itself, I would like to say that epidermis alone will never express the animal; it is the soul or the essence of it that counts in any work of art."

Even though his point of view has changed in recent years and he now welcomes an opportunity to portray the human figure as well as the animal—his Morristown Equestrian of Washington is an example of the later mood—he says he thinks of his early days of specializing in the portrayal of animals as "a stepping stone to a

COURTESY OF THE AMERICAN FEDERATION OF ARTS

"THE FOOTPRINT," A MASTERPIECE

The late Arthur Putnam sculptured this dramatic incident in the life of a mountain lion, who has just discovered a human footprint

considerably wider, more comprehensive view of life."

Our supposedly unpopular frogs and lizards have a lively champion in Albert Laessle. By concentrating on the modelling of the smaller animals, birds and even reptiles—unusual subjects, you see—he has dared to be different! And he portrayed these turtles and lizards and frogs and penguins, not because he thought they might be good for commercial reasons, mind you, but because they prick his own personal interest. His originality of subject accurately treated instantly set him apart from the throng, and has for over twenty-five years been winning medals.

When asked how he came to portray subjects usually spurned by the multitude, Mr. Laessle merrily recounts the story of his student days under Grafly when a snapping turtle was brought in for dinner—for Mr. Grafly's dinner. But Mr. Laessle, in observing the sundry aspects of this turtle, became so completely engrossed that he appropriated his instructor's would-be meal and modelled a piece depicting a struggle between a turtle and a crab over a dead crow. This he submitted to the Art Club's Exhibition in Philadelphia, but so perfect was the work of this twenty-four year old sculptor, that to his dismay, everyone believed his piece to be a cast. And so the next year he modelled the very same turtle in wax—to prove irrevocably the authenticity of his work—and exhibited it at the Pennsylvania Academy of Fine Arts; the Academy bought it, and museums have been welcoming his work ever since.

To him the lives of animals contain quite as much of tragedy or humor as do those of human beings. And in the case of the penguins, the interest is of a humorous nature. The two birds stand together with that poise and quaint dignity which so comically suggest such a caricature of humanity as Anatole France achieved in *Penguin Island*. Yet in creating this amusing situation, there is no lack of accuracy in the portrayal of the anatomy of the birds, for Mr. Laessle always shows the character of his subjects in such a manner that it is as satisfactory to naturalists as it is to artists.

A lack of space precludes more than a word concerning other famous members of this school—Eli Harvey, Henry Merwin Shrady and James L. Clark. His unexcelled presentation of the cat tribe distinguishes Harvey. How Shrady came to be an animal sculptor by sketching animals he saw daily in a store window, and then teaching himself painting and modelling, is a perfectly delightful story in itself. And of course, the work of James L. Clark, the naturalist, is familiar to us all. The contribution of these nature-lovers to sculpture is incalculable, for out of their work will grow inevitably a deeper appreciation of both art and Nature and a richer heritage of bronze.

THE MASCOT OF THE SHOP

SHENANDOAH WORKERS ADOPT GENTLE PET

BY W. B. CLARK

A VERY FRIENDLY FELLOW
As ready to climb into a human's lap as to crawl over his emptied plate

THE Shenandoah Community Workers, makers of bird puzzles, feeding stands, antique furniture and other products of the forest in their little Virginia valley, have a new mascot. He is a well-behaved skunk. Ever since the State designated the land of the Workers as the Shenandoah Bird Sanctuary, there have been plenty of feathered creatures eligible for mascotship, but after the baby skunk was found, he was duly established in the position. He quite obviously had been orphaned; he could barely walk, and seemed in need of food. A most catholic diet beginning with milk through an eye dropper and winding up with caviar and lobster salad soon brought him, however, to vigorous young skunkhood, and there is nothing that he will not now eat. His conduct is exemplary, and though he has the run of the buildings and grounds, he has made no attempt to escape. He follows the workers like a dog, and plays like a kitten. Who knows, the experience of the Shenandoah Community may lead to the establishment of a Park Avenue fad, for all visitors to Bird Haven carry back a fine impression of skunks as pets.

On these pages we present ten interesting birds, snapped in the Zoo by H. Armstrong Roberts. Above is the Scarlet Ibis, formerly common in our southern states and now confined to the West Indies, Mexico and Central America. Below is the Great White Egret of tropical America and the southern states. It visits the eastern coast regions in late summer. Above, we have the Straw-Necked Ibis, a rather common fellow in zoos. At the left is the Nankeen Heron, an Australasian species much like our own Night Heron. Below is none other than the Red-Billed Toucan, one of the larger species.

Here are five more interesting birds, the one above being the handsome Cayenne Lapwing which comes from South America. At the right is a native, the Sandhill Crane of our own western and southwestern plains. Many know it in the wild. Below is another crane, the Stanley Crane of South Africa. It is a bird of the dry veldt country. Above is a bird known as the Wattled Lapwing. It is a native of India and it warns other game birds by its own cries of alarm. Below is the Crowned Crane of North Africa. This bird is often tamed by the natives and is interesting in its feathered adornment and quite common in that region.

A MONITOR LIZARD'S LIFE

HOW THE HUGE REPTILE PERPETUATES ITS KIND

BY RAYMOND B. COWLES

THE NEWLY HATCHED YOUNG OF THE MONITOR

From deep in a termite nest they worked their way upward to the surface, then, free, sought the river where precarious existence awaited them

A BATCH OF THIRTY LARGE EGGS READY TO HATCH

For nine months these leathery-coated monitor eggs lay in the underground chambers of the termite nest, safe from every foe. Then the young came forth

TOWARD noon the sun that shone down into the valley of the Umzumbi river on the south coast of Africa grew hot. Warmth penetrated to the deeper recesses of the caves along the cliff. The birds grew quiet in the heat of day, or splashed joyously in the shallows along the river. Suddenly, pushing slowly out from one of the caves a scaly, black and yellow head with darting forked tongue looked out over the river. Inch by inch the cautious animal moved, until after fifteen minutes or so the entire lizard, five feet long, lay basking in the hot sun. This giant reptile, a Nile monitor, showed by its heavier body that it was a female. A male would have been more slender, adapted for speed and an ability to range more widely over the countryside.

For an hour or more the monitor lay in a reptilian torpor, moving only to keep in the grateful warmth of the sunshine. No effort was made to hunt food, and most of the time by only a slight movement could it be seen to differ greatly from the nearby roots and vines. As the sun moved past the zenith and commenced to sink towards the west, the shadows lengthened until finally no grateful light fell on the warm rocks or on the monitor. With the disappearance of direct sunlight, the lizard slowly moved back to the shelter of the cave behind it, and once more disappeared from view.

At last the moon rose to shine down on an ancient cliff, scarred,

seamed with crevices, and raggedly draped with the carelessly flung vines of a creeping fig. The water below the cliff flowed smoothly, a sheet of silver against the black reeds along its margin. On the steep slope of the cliff above, black caves and long black scars of crevices marred the tawny face of rough rock. But the monitor never saw the moonlight. It slept in its retreat.

The cliff was the home of deadly snakes, the long, slender black imamba that shows only as a dark shadow stretched across the path of a night-traveling native, the snake that deals sudden death to the incautious. It was also the den of puff-adders, sluggish, savage and too lazy to move, preferring to inflict a deadly stroke from their fangs rather than stir hurriedly and get away.

Along the skyline, the giant Euphorbias towered stark and bare, black candelabras against the faint glow of the setting moon. In all directions there was complete immobility. No breeze was stirring and the water flowed so slowly that no ripple marred the mirror surface.

In all that vast quiet, however, there were faint stirrings. Near at hand the leaves rustled stealthily as some mouse or shrew hunted a belated meal. In the distance a bushbuck barked, while now and then the melancholy hoot of a great fish-owl came from up-river. But the great monitor lizard could be neither heard nor seen.

As the moon sank behind the trees and slowly disappeared beyond the cliff, the east turned gray, then pink, until at last the first warm rays of the morning sun glistened on the rocks and turned the black Euphorbias back to their normal green.

With the faint hint of dawn the birds had started calling—first the thrushes, singing their clear melodies, then others chiming in until up and down the river where all had been so quiet an hour before, a din of bird songs rose to greet the cheerful day.

With the passing minutes each patch of weeds and all the reed beds contributed their new quota of bird song so that when the sun at last removed the faintest vestige of the night's chill, the air fairly vibrated to the stirring life that throbbed and pulsated to the coming of spring.

Although the air had warmed, the earth and cliff still held the coolness that had been absorbed during the night, and reptilian life still lay in numbness. Outside the deep retreats of the cliff, the bird world carried on its cheerful activity. A hammer-head "heron" screeched his harsh clattering song along the flats near the river where he fished for such scanty food as winter offered. In the hills up-river, the ground-hornbills boomed like distant drums, and the francolins whistled or cackled according to their species. Noon approached.

Then once more came forth the huge reptile, to bask again in the sun in sluggish content. And with the evening shadows she again withdrew to torpid slumber.

A STUDY IN VORACIOUS REPTILIAN APPETITE

When the rains came to Africa, the monitors found food in form of insects, mice, frogs, and nesting birds most plentiful, but in hard times even carrion was relished

For a month, each day passed with scarcely any variation in her behavior but as the weather grew warm, each day brought a little more activity, and each movement became quicker and more animated. At last a day came when for the first time the sun blazed down and the air was as hot as in mid-summer. When the sun reached the cliff with full force, the monitor slipped out from its retreat, and with darting tongue and high-held head started a serious hunt for food.

Keeping to the brush covered slope where the heat was greatest, the giant lizard cautiously crept through the weeds and grass. Here and there a luckless cricket or crawling slimy slug was picked up and gulped hurriedly, but these were merely appetizers. Turning from the brush

the lizard hunted leisurely down toward the river and the more prolific hunting grounds where all forms of life congregate, herbivores or carnivores, each feeding according to its taste.

As it reached the grass growing near the edge of the bush, something moved and the trail of the moving form could be followed by the quivering of the grass blades. Like a flash the monitor pounced, and with one savage bite crushed the unfortunate mouse that had so carelessly betrayed its presence. From this time on, the river proved an abundant source of food. Along the banks birds and insects congregated, and in the water, crabs and other forms of life supplied a plentiful and varied bill of fare.

When fresh food became scarce or difficult to obtain, carrion in the form of any dead bird small enough to be easily swallowed, or mouse, no matter how badly decayed, proved welcome additions to what might have been a monotonous diet.

With the approach of summer, the heat grew more severe, but each day the big cumulus clouds prophesying rain were more and more common, and the distant thunder rumbled. With the first rains, food would be abundant and all the predacious animals would commence to grow fat.

Finally, one hot afternoon, when it seemed the heat could no longer be endured, towering thunder-heads climbed over the distant hills, and the blue-black recesses of the clouds showed streaks of lightning. With a rush the storm broke and for two hours the thunder echoed from the hills and pouring torrents of warm rain filled the air. At evening, when the sky cleared briefly, and the sun came out, the birds broke into song. When darkness fell, from the swamps and rivers and every little pool, far and wide, came the roar of frog voices.

On the days that followed, warm and cloudy, more and more frogs seemed to jump into being, and the monitors thrived. This was the time of real abundance, and in the months that followed, each individual gained in weight and strength.

BRACED FOR A LASHING STROKE

The broad triangular tail of the great reptile was a formidable weapon, as many dogs learned to their pain and sorrow

At night it was unnecessary to stir, food was abundant, and the numbing chill of evening did not have to be braved in a late search for food. Many animals were breeding and the young of some, and the eggs of others, especially of ground nesting birds, contributed to a steady increase in energy. From everywhere the wandering monitors appeared. The mating season had begun and restless desires kept them on the move.

The big female, still feeding along the banks of the river, met many other members of her race and for a time traveled with another smaller individual, a male. At length she found herself alone, but still restless and unsatisfied, so that instead of haunting the riversides she took to wandering in the open fields. From time to time she barely escaped from dogs and herder boys, but there were few enemies besides man and his allies, so she kept returning to the open.

After several days of rain and warm, steamy weather, she moved out across a field and for the first time really noticed a high mound of earth. It was not in her path but with a sudden stir of interest she turned off to investigate. At the bottom of the hill she pawed idly for a moment, then sensing that the termite nest had been opened, strong instinct compelled her to dig.

Once started, she dug fiercely into the termite nest until she reached the center of the earthen

WHERE NEW GENERATIONS WERE BORN

The opened termite nest reveals the central chamber where the eggs hatched and the vertical chimney dug by the young seeking the surface of the ground

mound. Here she paused, then backed out only to turn around and back in again. Although the termites swarmed over her, they were unable to make an impression on that armoured skin. For some time she remained in this position, then restless no longer, with a batch of thirty large eggs already laid, she moved away, again to the river.

The eggs, as large as hens' eggs, creamy white and covered only with a leathery coat, remained uncared for in the nest. Although they were forgotten, there was no need for further attention. Within an hour, the termites, working furiously with the moist earth, were covering the last visible portions of the eggs, and within a day or so no sign of the tunnel that had been driven into the termite hill would remain. Even the scars of the digging, showing slightly darker than the rest of the hill, became undistinguishable. No eggs could be safer than those protected by two feet of strongly built termite nest.

For nine months the termite nest stood concealing its secret. Antbears dug into the side, obtained a meal and wandered away. If they returned a week later, no sign except a faint scar would show where the break had been made. Bulls in their superabundant energy gored the ant hill, but the breaks were mended.

Summer waned and the cold rains of autumn moistened the outer layer of earth but in the center of the nest the temperature remained a safe sixty-five degrees. When winter with its months of cold, dry weather came, the eggs were still warm. Even the dryness, fatal to monitor eggs, left them unaffected. Inside the nest was the proper degree of humidity, maintained by the structure of the nest and the activities of the termites.

When spring once more arrived, the rains still left the eggs protected. Even the extremes of heat and dryness in the first months of summer passed harmlessly by. When the earth an inch underground showed 136 degrees, a heat fatal to these eggs, the temperature where they lay rose only to a comfortable eighty degrees.

Nine months after laying, the eggs commenced to hatch. There would be no mother to help her young escape from the termite nest, now hard as clay. Alive or dead, after these nine months, she would not have returned.

In the dark recesses an egg cracked open. All about it the walls of the termite cells pressed down, harsh and hard against the tender nose of the young monitor. Haste is not a habit with most reptiles, however, and the young lizard struggled only mildly. With the cracking of the egg, the liquid slowly oozed out and gradually softened the nearby clay. Egg after egg cracked open and soon the hard clay cells broke down. Each day the mud grew more abundant and the opening larger. As each young monitor crawled out of his shell he helped enlarge this dark cave, and commenced working on the ceiling, attempting to dig upward.

Days passed, and the central chamber grew larger until at last all the eggs had hatched. Inside, a struggling mass of savage little monitors went about their customary procedure. They might struggle, but they would not fight.

Eventually, working one at a time, they carried the passage from the roof of the center chamber through to the outside world and a young monitor of the new brood looked out on the grassy fields. Nine months of development, and they were free to move out and to explore.

One by one the little lizards warily crawled out from the safe retreat and headed for the stream. Covered with dried mud, they looked exactly like the ground, and so through one more phase in their curious life-history they were well protected.

Some few reached the stream, the others were killed by enemies scattered along the road to water. Those that reached the water at last plunged in and in a moment the coating of mud was washed off and the clear yellow and black markings showed bright and sharp. Each wavy line resembled a shadow and each patch of yellow a spot of bright sunlight. Men walking almost over them failed to notice the little nine-inch creatures. As the days passed, one by one through carelessness, or ill luck, disappeared. Some graced the collection of rubbish decorating, or at least accumulating, on the top of a hammerhead's nest. Others met their fate in the form of the little green-backed herons. Yet some survived, and when the summers again grew hot, and the rains made rich the living, these found their mates, and the females restlessly hunted for other termite nests, to perpetuate their kind.

In the February issue of Nature Magazine Arthur Newton Pack will describe his adventures on the trail of the caribou in Jasper National Park, Canada. This is the latest camera-hunting expedition undertaken by the President of the American Nature Association.

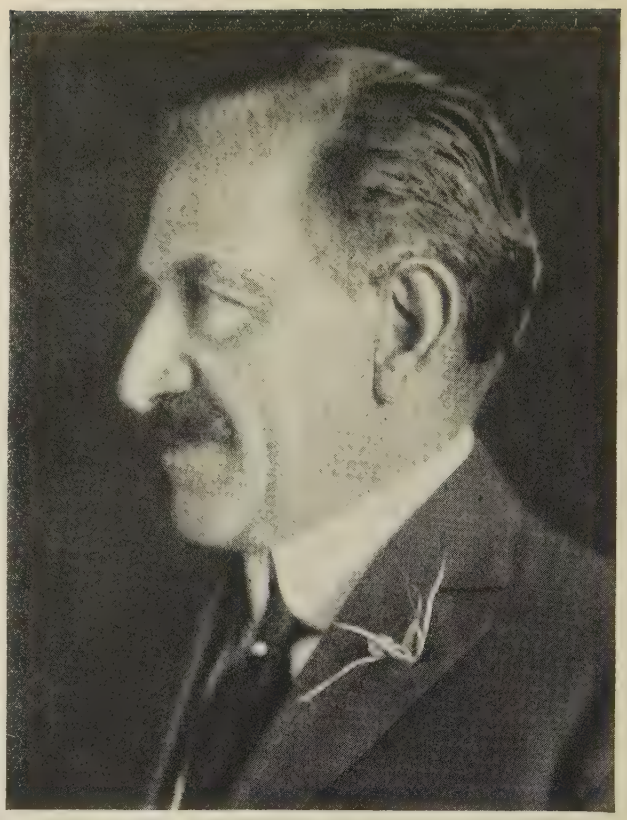
Other features of the next issue include a beautifully pictorial coyote article by Lorene Squire; a fascinating story of the turret spider by Sherman C. Bishop; the second part of the delightful story of the jungle by Dallas Lore Sharp; a frontispiece in color by R. Bruce Horsfall; another article in the "hobby" series and other attractive features. Other writers for the next issue include R. P. Gait, Vernon Bailey, Charles Fitzhugh Talman, Clarence Baker, Tom Wallace and Isabel M. Lewis.

ORCHID-LOVER

SAMUEL UNTERMYER, WHOSE FLOWERS ACCOMPANY HIM TO COURT

BY ADOLPH L. FIERST

This is the first of a series of stories about the Nature hobbies of people prominent in many walks of life. This group emphasizes the general interest in Nature that may be found, often in the most unexpected places and on the part of men and women whose callings are in totally different fields. An interesting group of stories is in store.



WITH THE TRADITIONAL ORCHID

One of America's greatest lawyers, noted for his fights against privilege, gains inspiration from flowers

In an immense, sunlit, private office on the twenty-third floor of the Equitable Building, in the heart of New York's financial district; in his apartment on Fifth Avenue; in a pent-house atop the President Hotel, in Atlantic City; and in a great pile of masonry at Greystone, near Yonkers, New York, stand great vases filled with magnificent orchids. Wherever the master of these widely separated places may be, he has his fresh orchids. Samuel Untermyer, at seventy-two, is almost as famous for his flowers as for his unparalleled career in law, finance, and civic welfare.

It is doubtful whether anyone, during the past thirty years, has ever seen the great lawyer without an orchid in his lapel. He has one great hobby—flowers—and on them he spends hundreds of thousands of dollars every year. To say that Mr. Untermyer derives more personal satisfaction from his hobby than from his legal and civic activities would be an exaggeration; but it is most assuredly true that this man of superior intellect—he has been called a man of genius—derives more pleasure, stimulation, and inspiration from his thousands and thousands of plants than an average individual could draw from any recreation or hobby under the sun.

Mr. Untermyer turned to horticulture because he is passionately fond of flowers, and always has been; because he felt he could best express his pleasure in Nature by surrounding himself with her most beautiful productions.

Why did he select orchids as his special and personal flowers? Because, as he himself says, "the orchid is the king of flowers; because it is superior to all other flowers in beauty of shape and color, in delicacy and aesthetic appeal; and *because it is most difficult to cultivate.*" The difficulty appeals to him almost as much as the beauty. It is obvious that a man of his temperament, who has launched successful attacks against vast wealth and power requires something to stimulate constantly his instinct for battle. In his orchids he has found the one recreation which satisfies completely the pleasure of the senses and the keener pleasure of the intellect.

On his hundred-and-seventy acre estate at Greystone, Mr. Untermyer has plants from all over the world. In all, he has about sixty thousand—a staggering total, an incredible number for a private collector. Orchids from the steaming glades of Africa, giant cacti from the Mexican deserts, immense tropical blooms from the lush banks of the Amazon—flowers from the ends of the earth pay tribute to his marvellous Nature hobby. The tulips of Holland and the velvety, purple, grapes of Italy are equally at home at Greystone which appears from a distance more like a forest primeval than a beautifully planned show place on the Hudson, so numerous are its trees.

Mr. Untermyer's orchids have won, literally, thousands of prizes in various contests. The pleasure the famous lawyer derives from winning these competitions is complementary to the pleasure of raising the delicate blooms. In his greenhouses—where he raises tropical delicacies like figs and dates, and out-of-season fruits as grapes and peaches and pineapples all the year round—he employs, at the present time, twelve horticultural experts. To care for his rolling acres of trees and plants he employs an additional fifty.

It is a legend in New York that orchids keep this almost legendary man at the top of his form during great legal battles and important civic struggles. He never appears in court without his orchid; but it is not generally known that the orchid must (Continued on page 57)

GREAT HORNED OWL

These are the most powerful of owls and range over ide territory from tree limit in our north to the forests f the tropics. The location of the nest varies from reetop to rock ledge, from hollow tree to cave. It is uilt of weed stalks, rootlets, twigs and feathers, to- ether with the remains of former feasts. The two or hree white eggs are among the largest laid by this type f bird. These owls are bold and usually successful in heir hunting tactics. They glide so noiselessly and wiftly that there is no escape from their sharp talons. t takes innumerable gophers, ground squirrels, prairie ogs, rabbits and other rodents to feed the growing oung. In the removal of these, the birds are exceedingly eneficial but many of our larger birds also fall victims o their voracious appetites. As they catch vast numbers f rats, they are invaluable to the intelligent farmer vho takes the trouble to shut up his chickens at night. Their call is very characteristic and clear, and for this eason, the birds are generally known as Hoot Owls.

GREAT HORNED OWL—*Bubo virginianus*

SNOWY OWL—*Nyctea nyctea*

SNOWY OWL

The snowy owls come to us out of the north where arctic tundras provide homes for many mice and other rodents, range for grouse and hare, and open water for fish and waterfowl upon which they subsist. From an elevated vantage point, they noiselessly descend upon their prey. It is thought that the reason for the occasional invasions of these owls is a shortage of food so that they hunt in wider and wider circles until they reach as far south as Oregon, Colorado, Illinois, and Virginia, accidentally to Texas and California. Their breeding range is circumpolar far within the arctic circle. The nest is a scantily lined depression, in a clump of the lichen commonly called reindeer moss. The three to ten eggs are usually pale cream color. These intelligent owls are diurnal with yellow eyes, the pupils of which dilate or contract slowly and the eyelids are used to shut out extreme light. They are birds of swift flight, keen vision, are unafraid, and on their southern forays are useful in the destruction of the common Norway rat.

SHORT-EARED OWL

The short-eared owl is found throughout the Ameri- an Continent. Our North American species breeds rincipally in the land of perpetual daylight in summer. Unlike their nocturnal relatives they place their care- essly built nests upon the ground sheltered by bushes r clumps of grass on marshlands. The white eggs num- er four to seven which hatch at intervals of a day or wo so that the nestlings are in correspondingly different tages of development. In their food habits these owls re beneficial as the greater part of their diet consists f mice, and instances are on record in which they have aterially assisted in the suppression of mouse plagues. ome birds and many insects are also eaten. The ear ifts are small and almost hidden. The internal ears re of exceptional size because these birds must depend largely on hearing in the capture of their prey. Dur- ng the winter these owls may be seen in many parts f the United States flitting noiselessly about over ow meadows in the early twilight, resembling large bats.

SHORT-EARED OWL—*Asio flammeus*

SAW-WHET OWL

The metallic quality of the whistled note which is repeated at intervals of two to three seconds for several minutes resembles the sound made by filing a large saw and gives the name Saw-whet to these owls, the smallest owls of the north. They nest in a tree hollow, usually in the hole of a flicker or squirrel. The three to six eggs produce birds which when full grown are so unlike their parents that for a long time they were thought to be another species. In the wings and tail alone the young are like the old birds. Saw-whets are found throughout North America breeding from southern Canada and southern Alaska, south to middle United States, irregularly moving to southern United States if the season is severe. However, they move about according to food supply and may not be found in the same locality every year. Their flight is so straight and bullet-like that the birds have been mistaken for woodcock. These nocturnal owls spend the day in some dense tree sleeping so soundly that they may easily be captured.

SAW-WHET OWL—*Cryptoglaux acadica*

BURROWING OWL—*Speotyto cunicularia*

BURROWING OWL

Among the most remarkable of our owls are the small burrowing or ground owls. Because they are able to use the deserted burrows of prairie dogs and other rodents for their homes they can live in regions that would seem unsuited to owls. The nests are sometimes placed as much as ten feet deep in the burrow and may hold from six to ten white eggs. Small reptiles, some birds and ground squirrels, many mice, and larger insects supply food for these ground owls. The species should be considered one of our most useful, and well merits protection. These owls often may be seen sitting upon a post or on the mound beside their burrows, for they are diurnal and hunt even in the brightest sunshine. When approached they bob their greeting and turn their heads about to watch the retreating guest. They range over unforested portions of western North America to the eastern edge of the Great Plains. There is a Florida sub-species which makes its own burrows in the loose sand and sometimes lives in large colonies.

PYGMY OWL

These are owls of the western forest land from southern Alaska south to Mexico and east to Montana, Colorado and New Mexico. They are the smallest owls which are found over a wide area. Their food consists of many kinds of insects, lizards, mice, birds of various sorts and ground squirrels, and stomach examinations have revealed bones and scales of fish. Some hunting is done in the daytime but these birds usually spend their hours of light near the trunks of dark shaded evergreens, and hunt during the twilight hours. They use old nests of woodpeckers and the three or four white eggs are about the size of those laid by the robin. Curiously, the flight of the pygmy is not noiseless as is usual with owls but produces a whistling sound. They are of an unsuspicious nature and will come to investigate the source of their imitated call. There are two color phases, grayish brown and reddish brown. Their call; similar to that of the saw-whet, softened and quickened; may be heard most often on cloudy days.

PYGMY OWL—*Glaucidium gnoma*

Screech Owl—*Otus asio*

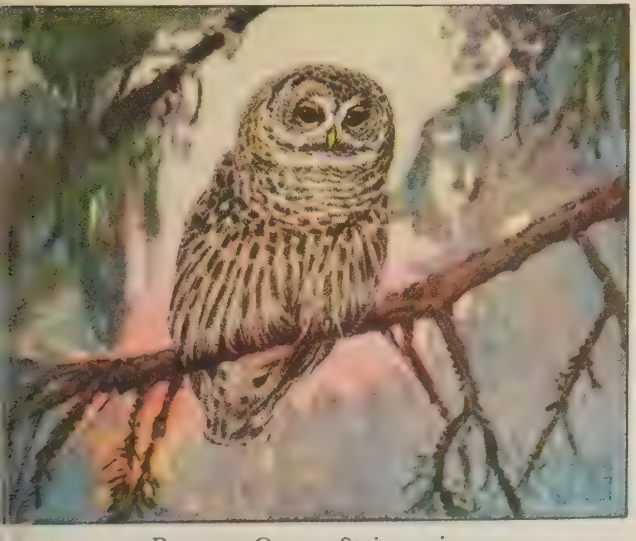
SCREECH OWL

These are probably the most generally known owls for they are common in one of their many sub-species all over the country. They are attractive with their prominent ear tufts and bright yellow eyes. Then there is the exciting possibility of finding the two color phases, gray and brown, in one family. Their usual call is just a friendly quavering question, but they have been known sometimes to screech. They nest in cavities in trees or stumps often in an orchard not far from a house. Early in April the four or five white eggs are laid upon a few leaves, bits of grass and feathers and when hatched are pure white downy chicks. They keep their parents busy catching mice, moles, wood rats, beetles, crickets, cutworms and grasshoppers to satisfy their insatiable appetites. These owls are also very fond of fish, and have been known to catch them at holes in the ice. As they are usually permanent residents within their range, they may be encountered throughout the year. To the superstitious, their call means ill fortune.

HAWK OWL

These are birds of the far north and together with eir old world representative, are circumpolar in distri- ution. They are strictly diurnal and their method of unting is so much like that of the hawks as to account r their name. They perch on some high exposed tree ag where there is no obstruction to their view of the rrounding country. They are alert and ready to make swift, direct flight to the ground for their prey. The le difference is in the characteristic, noiseless, owl ght. While on the wing they utter their shrill call. he food of these birds is the small mammals of the gion, lemmings, mice, hares and some birds. They e abandoned nests of hole inhabiting birds or natural vities, usually in trees, and these they line with athers and moss. The three to seven eggs are white. hese owls come into the northern part of the United ates about the last of October and stay during the nter season, leaving again about the first of February. uring this time they eat many injurious creatures.

Hawk Owl—*Surnia ulula caparoch*



Barred Owl—*Strix varia*

BARRED OWL

The large size, smooth round heads and black eyes are characteristics of these owls which select some hollow in a tree, an old hawk's nest, or perhaps that of a crow, to serve as a place for the two to four white eggs to hatch into fluffy babies as white as the eggs from which they came. These homes are in dense woods along streams where food is plentiful, more than half of this consists of mice, though frogs, crayfish and insects are relished as well. This species is usually resident wherever it occurs throughout its range in middle eastern North America where it nests well up into Canada, west to Montana and Colorado, south to Kansas, Kentucky, southern Illinois and Georgia. They sometimes choose to live in woods near cities where they dispose of innumerable rats. In early evening and before sunrise these owls utter their challenge. Surely they should be named Hoot Owl to the exclusion of others of their tribe, for none can ring more changes nor put more weirdness into night notes than they.

BARN OWL—*Tyto pratincola*

BARN OWL

These are the birds of church towers, hollow trees and barns. Though commonly called monkey-faced owls, the name golden owls seems more appropriate. The nest is made of hay, sticks, refuse and bones too large to be eaten. As is usual with cavity-nesting birds, the eight to eleven eggs are white. The young are fuzzy-white and do not begin to show real feathers until they are three or four weeks old but by the time they are twice that age they are fully feathered and ready to fare forth for themselves. During all this time they have been eating, every day, their weight in mice of many species, gophers and other destructive small animals. These are usually swallowed whole, the hair and bones later ejected in matted pellets. Food is brought to the nest by the old birds who begin to hunt as soon as it is dusk and continue throughout the night. Their breeding range includes the southern part of the United States with scattering records across Canada, in Mexico and the eastern part of Central America.

GREAT GRAY OWL

These spectral owls range to the extreme limit of dense forest growth in northern North America. They are by measure, the longest of our owls and appear to be the largest though they are not the heaviest. The plumage is loose and soft so that the birds move about noiselessly. Since their summer home is in the land of almost continual day their habits are, of necessity, diurnal. Perhaps this accounts for the fact that their eyes are smaller than those of their southern cousins. Mice, squirrels, hares, ptarmigan and smaller birds comprise their bill of fare. The open nest which is built of sticks, twigs and moss and warmly lined with feathers, is placed high up in one of the cone-bearing trees. The two to four eggs are white and among the largest of any of the owls. The downy young are pale brownish-buffy. These birds migrate southward to middle United States for the winter months. Since they seldom leave their deep-woods homes, they have no natural fear of human beings and so, sometimes, may be very easily caught.

GREAT GRAY OWL—*Scotiaptex nebulosa*

LONG-EARED OWL—*Asio wilsonianus*

LONG-EARED OWL

These are among the handsomest of our owls, and are of medium size with extremely long ear-tufts. They live throughout temperate North America and breed south to Virginia, Arkansas, northern Texas and southern California, spend the winter in most of their range and south to central Mexico. The nest may be that of some large bird or a squirrel, carelessly repaired; it is usually in a dense growth of evergreen trees and placed from ten to twenty feet up. There may be from three to seven or more white eggs. These owls have rather large families, but the species has suffered through senseless persecution. Where they once nested in large colonies, they are now nearly solitary. They are very beneficial owls, for their food consists largely of meadow mice and other small mammals, insects, spiders, crayfish, small snakes; frogs, snails and earthworms are known to be taken as well. Daylight finds them asleep in small companies in the fastness of some conifer. Stretched upright to the extreme, they appear to be chunks of gray bark.

THE WILLET DABBLES CONTENTEDLY IN THE GENTLE SURF ALONG THE FLORIDA SHORE

While the Wilson plover at the right led the photographer a merry chase over the scorching saline incrustations of the beach

GLIMPSES OF FLORIDA BIRDS

SOME OF THE AVIAN RESIDENTS OF THE EAST COAST

This article is arranged from the field notebooks of the late William Leon Dawson by Mrs. Dawson. At the time of his death the ornithologist was completing studies prefatory to writing a book on the birds of the peninsula state

I HAD glimpsed, this April day from my Palm Hammock Camp, an alligator out in the channel. But the swimming was good and the water caressing. It was only after some moments that I began to canvass the wisdom of my course, and when I had just about decided to make for shore I grazed an ominous object. The next moment I was dragged down by a hundred soft hands and—it was day, and I was awakened by a fine medley of chuck-wills, cardinals, and Florida wrens. The last-named soon won out and held the field alone, shouting again and again, *churlie—churlie—churlie.* I say "shouted," but it was rather as though the music bubbled over because there wasn't room inside.

During the night I had heard chuck-will's-widows galore—three in my near vicinity—but I could not find one of them by daylight. How I love those notes, passionate, faithful, unabashed exhortations to the most frightful of deeds, but all so kindly intentioned that the heart melts and flows in rhythmical, tropical pulsations. It is the authentic, irresistible voice of the South.

The salt savannas here are wonderful, the finest of their kind I have ever seen. There is a "selvage" of salicornia, not more than twenty to fifty feet wide, then salt grass a half mile or so, the most luxuriant I ever saw, a foot and a half to two feet high; then back of this, with some intermixture of dwarf rushes or sedge, the high grass of the back savannas, a mile or two wide—and the dusky seaside sparrow is the presiding genius of the whole lot.

AN IMMATURE BROWN PELICAN

Young, but possessed of all the solemnity characteristic of its kind

The variety of shorebird life which played about the borders of this island or hung about the lagoons was interesting indeed. Of the birds seen only the black-necked stilts, willets, and Wilson plovers could be suspected of intention to breed here. These birds are undoubtedly sketching in their

LEAST SANDPIPERS OUT A-WADING

Pictorially, at least, it would seem that the Bonaparte gull was standing watch

TWO STUDIES IN BIRD SILHOUETTE

Above, the Bahama redwing sits quietly for its photograph and at the right is the anhinga or water turkey. The male bird is just quitting the perch for a flight while its mate rests

nesting, but I doubt if they have got down to business yet.

The old camp had been a little spoiled for me by the fact that it had been invaded by a party of alligator hunters. The brutes had left five or six carcasses strewn around, and although the meat had been nearly consumed by the powers that prey, the odor of roses still lingered. Also the skeletons were poor company. I am not afraid of the ghosts of alligators, but I do not like their bones.

At nine o'clock, therefore, I gathered up my duddies and hied me to a weedy stretch back from shore on the mainland. After photographing a group of Bonaparte gulls in a perfunctory way, I yielded to the solicitation of a group of stilts and visited their sanctum, a perfectly dry pond site, now overgrown by low weeds, which beckoned a few rods away. There were at least twenty black-necked stilts here, and even so late in the season, when nesting should be in full sway, the old flock instinct was so strong that they bunched together and performed flock evolutions which were thrilling to behold.

The next most prevalent species, and one more interesting to me, was the willet. They were very dark, very long-beaked, very quiet, until they began yammering in a strange tongue,

ALONG THE SHORE OF LUCKY LAKES

At the left of the picture is a white ibis and at the right a group of ducks

very different from anything I have known in the West, save for one scolding note. Besides the *clep clep clep* notes, which remind one not a little of the notes of the jacksnipe on their breeding grounds, there is an explosive jumble of sounds, utterly beyond description, save that it reminds one vaguely of the long-billed curlew. Try as I may, I cannot make the birds say *willet,* or *pill will willet,* as they are said to do. The nearest I could ever come to it was *pee wee willie, pee wee willie,* and that I heard this morning.

The willet is very restless and much in the air, weaving back and forth, and not content to stand anywhere upon his breeding grounds. Again and again I was smitten with that strange contrast between the sobriety and indeterminateness of the standing bird and the bizarrerie of the bird's wings as noted in flight. The bird blossoms out suddenly and astonishingly and as like as not bursts into vociferation at the same moment.

This is certainly willet heaven here, about half a mile west of the ocean front, between two brackish lagoons. There are plenty of salty open places, and a low xerophytic plant with linear stiff leaves, just about adequate, I should say, for cover.

One interesting fact I learned, and that is that both the

HERON AND SOME BONAPARTE GULLS

Above is the Louisiana heron in portrait clinging firmly to its chosen limb, and at the left the ubiquitous and numerous gulls, always ready and interesting subjects for the bird photographer

black-necked stilt and the willet avail themselves of the services of others in stirring up the waters. For example, a willet and a stilt danced close attendance upon a lesser scaup duck, which was dabbling in the shallows. The birds avoided physical contact, but barely, and I could have got the three birds in conjunction, as the astronomers would say, any number of times. The duck resented these close attentions now and again, and the stilt invariably leaped with exaggerated agility, like a clown at a circus. Again, when the duck retired, a pair of king crabs mercifully appeared upon the scene, and as they dashed about in their hitching, reckless way, the two birds danced closest attendance and gleaned eagerly from the agitated waters.

AN AVIAN CANDELABRA

Roosting Florida cormorants in a cypress tree at the edge of a wood ibis colony

In the afternoon I set up my gray beach blind on a north promontory of made land, a pure sand and shell affair. Although I set up my own tent and remained in it from the start, I was busy from the first jump. Curiously, willets proved to be my best friends. Although they gave false alarms now and then, they themselves always stood by, and one bird in particular led the van of photographic onslaught upon my citadel. I photographed him at twenty feet *ad nauseam*.

The "composition" of my immediate field was poor, so I moved farther out upon the spit and was rewarded by good shots at the least terns, and many ensembles. Several times I had as many as five species upon my plates at once,—least tern, willet, Bonaparte gull, least and semipalmated sandpipers; but I am not sure that I got any such.

And so on till four o'clock, when, my plates all gone, I gathered up my kit, and to escape the haunted camp of yesterday, started out for a beach said to be eight miles away. The road drove straight eastward, and it got worse and worse as I advanced, so bad, in fact, that it was positively awful—a shell road, which had had no attention since it was built, and which by wind erosion had become a jagged mass of coral spikes. I hoped that if I could stick it out a little longer, the "other fellow" would be distanced. In this I was not disappointed, for the main beach road turned southward and I kept straight on, in spite of express warning that the traveller proceeded at his own risk. The road became immediately better and when I had advanced to within half a mile or so of the beach (it had been a twelve-mile stretch instead of eight!), I came upon a wild lagoon which held two groups of shore-birds, all of larger varieties. The nearest group contained eighty-nine birds, chiefly willets, black-bellied plovers, and dowitchers; while a more distant group, whose precise character I could not determine, held twice as many birds. Here was meat for my camera in the morning!

Arriving at the beach, I found road's end and sand—nothing more! Oh, yes, the ocean. But it was untenanted by that devious and often boresome biped, man. In the shelter of the sand-dunes I made a glorious camp, and although there was a late evening party of human visitors at the beach, I made light of them and slept soundly.

In the morning the entire landscape again belonged to me—and the pelicans. I had a glorious dip in the ocean, finding really delightfully warm water; and I am scribbling these notes at a scandalously late hour in the morning. All I can say in conclusion is, thank the Lord for so much of solitude!

Alas! my big flocks are gone this morning; but as I was searching the landscape back from the beach, I saw a black-necked stilt seated virtuously on a muddy bar upon a small aggregation of pellets, which I took, naturally enough, for a nest. I stopped beyond, but was momentarily intrigued by the sight of a willet in the distance, hugging the earth in similar fashion. I punctured the willet myth first—the bird was just resting—and then let a Wilson plover lead me a merry dance over some scorching saline incrustations; and then back to the old Biddy Stilt—who, at my approach, meekly gave up her charge, and disclosed—a place to sit! The birds are all just practicing. Or, more probably, they feel the restraining influence of the dry weather.

It is a wonderful day. The sun is shining clear most of the time, but the heat is not oppressive, nor do the mosquitoes, which to tell the truth are everywhere present, bother very much. There are clouds upon the horizon, sunshine overhead, and peace everywhere. The swallows twitter overhead; dusky seaside sparrows snicker occasionally in the grass; and distant fish crows caw punctiliously; but the air is full of peace—peace.

THREE-WEEKS-OLD SUSAN INDULGES IN A YAWN
The baby lioness, probably the only one ever brought up in a co-operative apartment, displays her lack of teeth

A SONG OF SUSAN

OR BRINGING UP A LIONESS IN AN APARTMENT HOUSE

BY LUCILE QUARRY MANN

Lucile Mann is more formally known as Mrs. William M. Mann, which identifies her as the wife of the distinguished Director of the National Zoological Park in Washington, D. C. She is, perforce, friend and foster mother of many interesting individuals of wild origin

SUSAN was born in the National Zoological Park on the eighth of July, 1930, at 2:30 in the morning. Her parents were fine lions, of unusually good stock, but young, and the mother refused to take care of her babies. There were three in the litter, all females, and that afternoon, when there was no longer any hope of the mother's nursing them, one of them was given to me to bring up on a bottle.

A new-born lion cub is surprisingly small. Susan weighed two and one-half pounds, which, compared with her mother's weight of about three hundred, is almost negligible. She made just a nice handful of brown and yellow fuzz. Her eyes were tight shut, her ears folded down into velvety black triangles, and, except for the large front paws and a certain grimness of expression in the lower jaw, she might have been mistaken for a puppy.

We live in a co-operative apartment, and one of the house rules is that no one may keep a pet without permission of the board of directors. It was, accordingly, my job to write the board: "Gentlemen: May I have permission to keep a lion in the apartment?"

The bravest member of the board appeared promptly, if a trifle nervously, at our front door, and when the tiny sleeping ball of fur was displayed, permission was quickly given to keep the cub with us.

That done, I had to teach the baby to nurse. We telegraphed to New York for a powdered milk especially prepared for puppies, and Susan began by drinking about a third of a gill of warm milk, every three hours, night and day. Sometimes it would take her half an hour to get started sucking, sometimes she would grab one of her own paws by mistake and suck on it greedily. She was born with claws big enough to do serious damage, and it was quite a trick to hold her with one hand, the bottle with the other, and not get scratched in the process. It took us two or three days to get used to each other, but

she soon associated the sound of my voice with food. One night when she was sleeping I was standing over her, talking, and she began smacking her lips in her sleep.

On July 14, one eye began to open, and for three days she went around with a most rakish expression. On the seventeenth, when she was nine days old, both eyes were wide open, and the little triangular face, with its blue eyes and rounded ears, was very pretty.

At first she crawled blindly about the floor. Her front legs were strong, and she could drag her hind legs after her, but she bumped into every piece of furniture we owned. She first began to use her hind legs on July 20, but she was three weeks old before she gave any evidence of being able to see. That night she walked up to a door, and instead of bumping squarely into it, stopped short and turned around. Her hearing was acute almost from the beginning, and she would stop nursing to listen to unusual noises in the street below.

She gained a little more than a pound a week all the time we had her. That means that she doubled her weight in three weeks; at the end of ten weeks she weighed thirteen and a half pounds and was a good husky youngster.

In other ways her rapid growth astonished me—her appetite, for instance. For the first few days a third of a gill was a meal, gulped down so fast that she invariably got the hiccoughs. At the end of two weeks she was drinking a whole gill every three hours. At the end of ten weeks, when she was no longer on such a strict schedule and was fed only in the daytime, she consumed three to four pints of milk a day.

IN A THOUGHTFUL MOOD

At seven weeks she was a bouncing youngster, able to do plenty of damage, and beginning to exhibit the characteristics of her kind

And how fast did her teeth appear! On August 3, her gums seemed a little swollen, and she whined a good deal. On August 4, she had four upper front teeth, all at once! On August 6, two lower teeth were visible, August 12, her canine teeth appeared, and by the eighteenth, the day before she was six weeks old, she had six small uppers, six small lowers, and four canines,—a formidable equipment, as she promptly demonstrated on my finger. August 24, her back teeth came through, and a month later she had a complete dental set and could tackle a bone with relish.

From the time she was five weeks old she trotted after me around the apartment like a

MORE LIKE A PUPPY THAN A LION

Playful, cute, and requiring constant attention, Susan, at three weeks, five days, was a jovial companion

ON A TOUR OF INVESTIGATION

Susan could not see at first, but when five weeks old she was alert to every movement and sound

little dog. She was always underfoot, and her constant invitation to play was offered by hooking all claws into my stockings. If I shut her out of the room I was in, she would sit on the doorsill and cry until I opened the door. Ordinarily she was very quiet, however, and I do not think that her various calls ever disturbed the neighbors. She could say "Miouw" with various intonations, depending on what she wanted. Sometimes she would give a "Woof," like a little dog. A loud "Ya-a-ah" usually arose at sight of the bottle. A rather vicious "Gr-r-r" came forth when she was frightened. She early developed a dislike for radio sopranos, and when one came suddenly on the air she would wake up from sleep to howl her protest.

After six weeks of patient effort, and without ever punishing her, I got her housebroken. As far as I know, Susan is the only lion in the world thus trained. She would leave her ball or her bone that she might be playing with in the middle of the floor and trot over to the corner where there was always a large supply of clean newspapers.

AN ANIMATE TEDDY BEAR

At ten weeks she made quite an armful for Mrs. Mann, and soon had to go back to the Zoo

She had the complete run of the apartment all day and of course caused plenty of damage. If anyone wants to follow my example and bring up a lion cub as a pet I warn them that food is the smallest item in the expense. Susan's food bill was about two dollars a week; repairs to rugs (which were damaged before I had sense enough to take them up) came to seven dollars and a half; the same amount was spent on having the floors re-finished; twenty dollars is a conservative estimate for replacing silk stockings (my own, and guests'); she never actually ruined any clothes (except one necktie belonging to my husband), and the number of threads pulled in trouser legs and skirts should be charged up to depreciation. My time may or may not be valuable, but she had every minute of it, day and night, during ten weeks of the hottest summer we have ever known. There were no days off to go fishing or swimming; no week-ends in the country—Susan had to be fed!

She was brought up as carefully and methodically as a human baby. She had her daily bath, was dusted with talcum, and had her eyes washed with boric acid; her food was measured and warmed, and given her in sterilized bottles on an invariable schedule; she was given cod-liver oil to prevent rickets and taken outdoors for occasional sun baths; she had as much petting and affection as could possibly have been good for her, but in spite of all she steadily grew—not into a domestic animal, not into a young puppy or kitten—but into a real, honest-to-goodness lion. It was the most fascinating study in development of instinct that I have ever seen.

Susan, of course, had never seen another lion; no mother lioness had taught her the manners of the tribe; but all the domestication in the world could not cover up the little savage that she really was. At six weeks old, she began stalking my feet, slinking along the hall, belly almost touching the floor, crouching and springing in a realistic illustration of a jungle lion after an antelope. At seven weeks she was given her first bone. If she had been a three hundred pound animal, and the bone had been a zebra, the gestures would have been the same: she sprang upon the bone, snarling, she slapped it with her paw, "killing" it repeatedly, she whirled around and around with it in her mouth, and finally dragged it off to a quiet lair to devour it in peace.

It was too much "lion instinct" that finally forced us to return her to the Zoo. As long as she had her own way she could be very charming. She would pat me with her claws sheathed and chew on me without biting. But if I tried to dissuade her from tearing strips of leather off our favorite chair, if I helped to unhook her claws from a treasured bedspread, or if I went to the rescue of a nervous guest, Susan would wrinkle up her face, lay back her ears, snarl, and take a piece out of my arm, entirely forgetting what good friends we really were.

As I write this, Susan and I miss each other pretty badly. We have an occasional romp together on the lawn, but the days are growing cooler and soon she will have to stay in her cage where it is warm. If she lives until next summer she will be too big for me to handle, but my one hope is that she will always remember me and her first days in the apartment, and that we can still be friends—through the bars.

Despite the fact that it is a new addition to our field trips, the announcement of the Caribbean cruise under the auspices of Nature Magazine has awakened remarkable response and early enrollment of membership. It will be a welcome interlude when the winds and snows of January are with us in the northern climates. Further announcement of the trip is made on the inside cover of this issue.

THESE ARE ALL LIVE BIRDS, BUT . . .
There have been reports received of birds in like numbers being killed by the wasteful and unnecessary pollution by oil

WHY TAR FEATHERED FRIENDS?

OIL ON TROUBLED WATERS TAKES HEAVY BIRD TOLL

BY GEORGE WILTON FIELD

HAVE we not among us a more serious state of affairs than that disclosed long ago by Charles Darwin when he showed that clover could not grow in Australia if all the "old maids" should emigrate? That was, he said, because old maids cherish cats; cats eat mice; mice eat the nests and larvae of bumble bees; bumble bees are the only insects which have the proboscis adapted for taking the nectar from the cultivated species of clover and thereby incidentally transferring the pollen necessary for producing clover seed. So—no old maids, no clover.

It may surprise many to know that if we continue the almost universal practice of wasting mineral oil we may well be caught in a net of similar biologic interactions far more serious than would Australia if deprived of her old maids.

The World War taught us not to waste oils of any kind or quantity. But there are oils and oils. Crude petroleum, as it exists in Nature, is a complicated mixture of a vast number of chemical substances still relatively unknown. These have a unique variety and degree of usefulness. Medicine, dyes, motive power, heat, road surfaces, and many other vital things come to us from crude petroleum. But useful things wasted become a nuisance. Wasted food becomes garbage. No substance in the world has provided a more outstanding example of this common everyday fact than has crude petroleum. It belongs in the firebox of the oil burning steamer, not on the clothes of the child playing on the sea sands. Useful in crankcases of the automobile, it should not mix with city sewage, or be made to spread over the water soiling bathing suits full of girls.

There is pending before Congress a proposal to amend the Oil Pollution Act of 1924, extending it to cover all sources of oil pollution in navigable waters over which the United States has jurisdiction. In the last northward migration season more than one million water birds were killed by oily waters between New Jersey and Nantucket. By passage of the Migratory Bird Treaty Act the United States has an international responsibility to protect migratory water birds from this needless slaughter. Dr. Field writes here of the problem, with authority and ability.

Yet this is what is threatening seashore and lakeshore bathing places from Florida to the Gulf of St. Lawrence, from Atlantic City and Coronado Beach to the old swimming hole. In some places this film of oil, at first

invisible to the naked eye, has already become a heavy brown scum, often with "gobs" of tarry oil. In many places it has passed beyond the "nuisance" stage. It has even become an actual menace. Where it collects on the surface in harbors, between docks, and among vessels, it has become even dangerous. It is the peculiar physical characteristic of mineral oils to persist unchanged, to run together, to form masses, or to spread over surfaces of water, which has caused petroleum to come to be regarded not merely as a nuisance, but an economic threat. It has become an obstruction to navigation, in a legal sense, not because vessels cannot sail through it, but because such mineral oils by nature are "not dilutable" with water, but stick, accumulate and are inflammable. Thus they increase the danger from fire to vessels and to other instruments of navigation to such a degree as to become an actual obstruction and hindrance to navigation.

WHAT AN OYSTER EATS

Microphotographs by Dr. Albert Mann of the diatoms in oysters' stomachs. These articles of diet are killed by waste oil

Because crude petroleum is of such a nature, Congress has the power and duty to regulate the use and abuse of this "mineral oil" with a view to preventing it from becoming more widely in fact a hindrance and obstruction to navigation, whether by boats or birds.

Soon after 1900, Dr. John C. Merriam, then studying the remains of prehistoric animals which had been caught in the deadly clutches of the ancient mineral tar pockets in the La Brea Oil Pools noticed the potential beginning of a somewhat similar modern catastrophe which had begun to involve the sea-birds in San Francisco Harbor. There the wastage of mineral oil from shore sources, oil tankers and oil-burning vessels collected into a film from which, at each contact, the feathers of sea-birds took on additional layers of oil until the birds became so gummed up that they could no longer fly, dive or feed. They were doomed to slow starvation, or to fall early victims to predacious animals and birds.

The mineral oil dissolves and destroys the natural oil, which normally waterproofs the feathers of birds. Certainly birds do not deserve to be tarred. Nevertheless more than one million sea-birds have been killed, during a single migration, between the winter feeding grounds and their northern nesting places, by the accumulations of oil on their feathers picked up as they stopped on the water to rest, to feed, and to wait for the ice to go out in the north. Over and above this is the very large but unknown number of birds killed by oil on inland waters. It is noted only when the results are found by some interested person or when the slaughter is on such a scale that reports reach the United States Biological Survey. And yet, since 1925 when the Federal Law became operative in theory, forbidding the discharge of oil from ships on our coastal waters, many written reports of such disasters to wild fowl have been brought to our attention.

In 1916 Dr. E. W. Nelson, then Chief of the U. S. Biological Survey, first took official cognizance of this threat to wild fowl. Cooperation was promised by some oil shipping organizations. It got nowhere until Congress, urged by conservation groups and individuals, enacted the Oil Pollution Act of 1924. This law, avowedly not the best, but the best possible at that time, is difficult to enforce. It applies only to ships, often far beyond supervision and peculiarly tempted from long custom to regard the ocean as a proper receptacle for anything not wanted. But, in the end the public has to pay the bill. And it is a big one! It increases the cost of living, and puts many worthy people out of business. Moreover, thinking people see that the present law is discriminatory. Why is not the same type of oil, entering the sea by rivers and numerous sources on land, as bad as that from vessels? The oil, if it reaches the ocean from Chicago or Oklahoma or Louisiana, even in such quantity that it cannot be detected by the human eye, may nevertheless be sufficient to dilute and to destroy the delicate film of bird oil which, taken by the bird's beak from the large gland at the base of the tail, waterproofs the bird's feathers. Then, too, the mineral oil on the surface may put out of business the microscopic beneficent types of bacteria and other small aquatic plants and animals, even if it does not happen to accumulate in sheets conspicuous to the human eye.

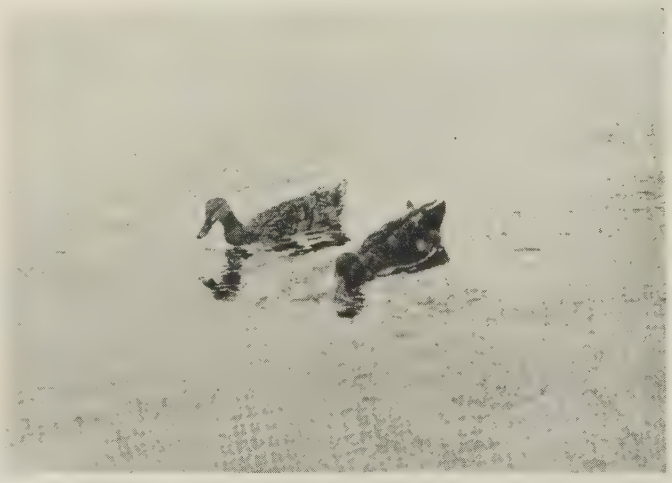
In addition, the present law fails to distinguish between the distinctly different types of "oils": relatively harmless oils, which quickly take up more water and oxygen, and so speedily return to their place in Nature. Such "oils" of animal and vegetable origin are those from castor, the seed, and castor, the beaver. Almost diametrically opposite in many important characteristics are the mineral oils, a complicated mixture of substances

that include some of the most destructively poisonous ingredients, combined into a spready, sticky, cumulative mass, exceedingly abundant in natural underground places, where it can do no harm, but now being more widely and dangerously distributed by man than any other substances having such destructive qualities. The mother substance is crude petroleum, which gives birth to the oils that do most of the serious damage to the bathing suits of mankind and of bird kind.

It is not sufficient to stop with the idea that oil becomes an obstruction to navigation. The films of oil on the surface of the water are not merely obnoxious to the sight, a nuisance to the bather, a damage to property owners and to public recreational facilities, and death to wild fowl. There is still a more serious side beneath the surface of the water. There are often concealed the dead and dying bodies of uncountable milliards of small animals which Nature intended should be converted into clams, oysters, crabs and fishes in variety, so that they might be used as food for man. These are resources capable of being farmed by man, and thousands of persons, who might have been cultivating aquatic gardens and who must do so if our nation is ever to rightly solve the farm problem, are today more or less unemployed. Conditions, induced by human business and political shortsightedness, no longer permit human brains, labor and capital to cooperate fully with Nature in the use of unspoiled water for producing fish, flesh and fowl, and good red herring. All these foods both by weight and volume are mostly water but nevertheless are good food, when combined with cereals and leafy vegetables to make a balanced ration, and man prospers by using them.

EIDER DUCKS SUFFER

Also the black ducks, below, are seriously affected by the oil on their wings gumming the natural oil a water-bird is equipped with



Mineral oils on dumps and "sumps," on swamps, rivers, ponds and lakes waste not merely the oil, but worse waste the water so that it can no longer perform its biologic function in Nature. It can no longer be used by mussels and frogs, by birds, cattle, or man. Vegetation and the lower animals die because oxygen can no longer enter the water in natural quantities. The carbonic acid and other poisonous gases generated by living and dead plants and animals cannot escape into the air. The natural process of evaporation may become seriously checked, and rainfalls become increasingly irregular.

In direct consequence of such conditions, the pearl button industry, in the Mississippi Valley, is seriously threatened. The same fate may overtake the hook and line and the net fisheries. Already the business of producing and distributing shellfish for human food has been well nigh wrecked by the acts of those other types of business which have not yet realized the fundamental importance of cooperation with both Man and Nature. Oil has stirred up troubled waters.

Fortunately those organized business interests which have prospered by the liberation of petroleum from its rocky prison, and by the development of the business of distributing it and widening its usefulness to man, have realized the dangers, and now have promised the greatest degree of cooperation ever developed by any business interest. But after all the only complete remedy is for Man, the individual, to supplement such organized effort, by avoiding studiously and as a habit the wastage even of drops of oil. And the first step is effective legislation.

Each time we bring out a special geographic number of Nature Magazine this policy is approved not alone in letters from residents in the section covered but by reactions from various parts of the country. It is not inappropriate to announce at this time, then, that the next special number of the magazine will be a Carolina Issue devoted to both of the Carolinas. A distinguished group of contributors has already been retained to prepare the main feature articles for that issue. There will be another of the famous map covers by Jex and other special features devoted to these two states, both of which are rich in wild life and scenic beauty.

ROSE ARBORS GRACE THE HOME BEAUTIFUL

Distinctive charm may be given the surroundings by the use of climbing roses, of which there are many excellent varieties

AMONG THE CLIMBERS

THEY CHANGE HOUSES INTO BEAUTIFUL HOMES

BY OTTO WILSON

OF COURSE, all of us have a house of some kind. Perhaps it is a real house, with plumbing repairs and coal bills and all the other delightful accessories. Or perhaps it is only a house-to-be—it might even be "the" house, vague but altogether lovely, which hovers in the dreams of fond couples. But anyway, it does have, or should have, a porch. And who dares think of a porch without the shrouding foliage of a friendly rustling vine?

But speaking of vines, why stop with the porch? All around, very likely, are spots which fairly cry aloud for climbing and trailing plant occupants. No doubt some ninety-nine per cent of us live in surroundings far less beautiful than they might be. Come for a moment and stand at your window (whether your house has yet been built or not), and let your imagination play like a searchlight over the near prospect.

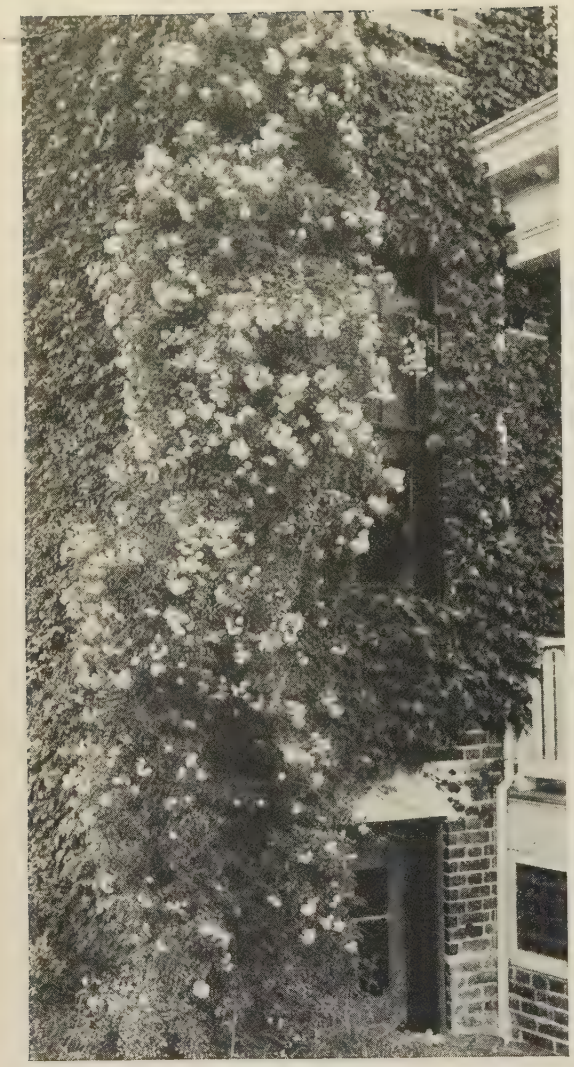
That staring blank wall—what a change a lacy pattern of creeping foliage would make upon it! Touch that wire fence with a botanical wand and see it burst into a mass of greenery and bloom. That bare lot really aches for a graceful pergola, that boundary line for a row of neat, slender posts supporting cascades of roses, those round porch pillars for circling sprays of delicate stems and fluttering leaves. And it would really cost very little to have them. A tentative plan, a little time and intelligence, not so much money, and a fine enthusiasm for the beauty of growing plants—mix them together, supply the spark of a starting impulse, and the thing is done.

"But I feel so helpless!" you cry. "I haven't the remotest idea where to begin."

Well, why not begin with trying to form an idea of what you really want? That takes some study. In spite of the oft-repeated assertion to the contrary, we do *not* always know, off-hand, just what we like.

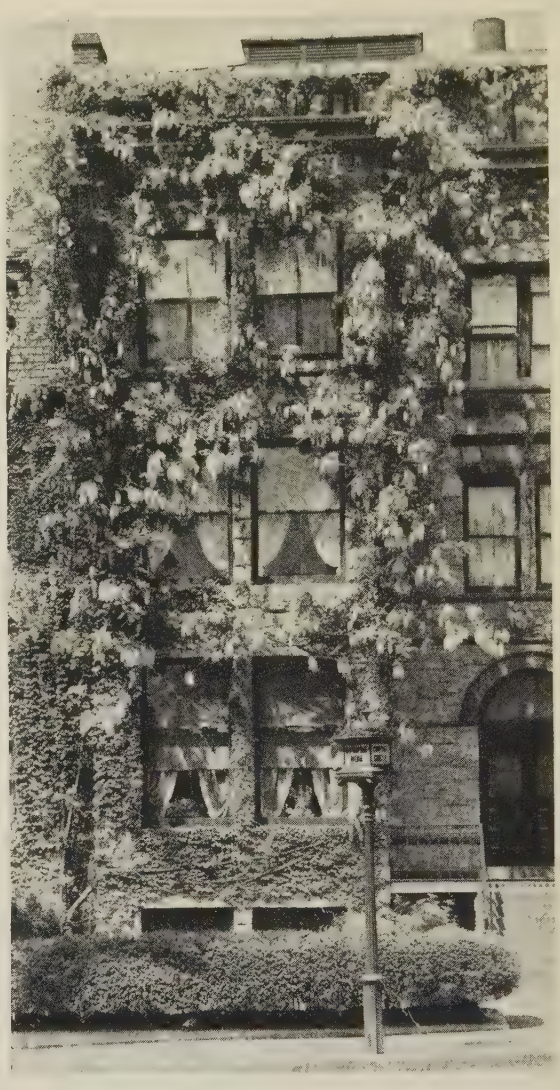
Would the brick wall, for example, look better with a close-fitting ivy or some bushier climber with greater depth of foliage? Some great rocks are to be covered. Shall we use a large-leaf or small-leaf vine? For the porch do we want primarily flowers or foliage, ornament or shade? Flowers, you say, are indispensable. But what kind? What color? With separate bloom or in a pouring profusion of light foamy beauty? And if we have to choose, shall we have our very heart's desire in flower forms for a few weeks in June or some less appealing blossom all summer long?

Then, most importantly, there is always the fact that we are not simply raising a collection of pleasing plants. We are arranging a big outdoor picture, with everything around entering into it. By all means let us have the flowers we like, but by all means let us remember that the passing public, and after a while we ourselves, will



ENHANCING THE BEAUTY OF IVY

Luxuriant with bloom, the roses create rich beauty against the green



THE EXOTIC BEAUTY OF WISTARIA

It magically converts a blank house-front into a delightful picture

judge the display by its group effect rather than by individual loveliness.

At any rate we are fairly launched. Now for the florists' catalogues, the consultations with the local nurseryman, if any, the questions put to friends (yes, even to total strangers who have attractive vine effects around their houses, if you can summon the courage). And then to the bookstore or the library for all manner of expert help. And then to the garden magazines, and the high-school botany teacher, and anyone else who looks as if he might be concealing some useful climbing-plant facts. And for the knottier problems there is always the willing two-cent stamp, waiting to carry a question to federal or state horticultural departments or to the agricultural college in the state. Helpless? You have so much help you do not know how to handle it all.

As for the plants themselves, they too come crowding in with offers of all sorts of pleasing effects. But just a moment! Before you can begin selecting here comes in that smiling marplot who has spoiled so many parties, the weather man, and insists on having his little say. Calmly he spreads before your eyes his records of temperature and drought, frosts and freezes, and those neat figures set the limitations within which you may work. For roses, for example, you find that there are, broadly speaking, three climate zones in the United States, one including the far south and much of California, another reaching up to or beyond the latitude of the Mason-Dixon Line, and another taking in the North and the non-mountainous sections of the West. Within these belts specified classes of roses may be expected to live through the winter without protection. Much the same limitation applies also to most of the ornamental vines. But, of course, by properly covering the plants in winter you can foil the weather man and perhaps greatly widen your range of selection.

And now for the favored flowers and green climbers and creeping trailers themselves. What is this gnarled and twisted vine, with elbowed branches that take such whimsical turns, with pendulous clusters of delicate mauve? Favorite of layman and expert alike, what could it be but that splendid announcer of spring, wistaria? There is no flowering vine quite like it. It speaks of far-off countries, where other civilizations, perhaps, and other

ways of thinking prevail. And, indeed, it is an importation.

The late Mr. E. H. Wilson, of the Arnold Arboretum of Harvard, called it "unquestionably the most beautiful of all climbers hardy in cool temperate regions". It came to us, it is reported, by way of England, where it was sent in 1818 from Canton by an officer of the East India Company. It harks back to the wild wistaria of China, and is a relative of that Japanese water-side wistaria seen so often in pictures, with slender raceme-flowers sometimes two or three feet long. The foreign tang to the name, however, is an illusion. It is pure American, derived from "Wistar" after Dr. Casper Wistar, a famous Philadelphia anatomist who died in 1818, and it was first applied to native American species little known outside of sections of the South.

Seeing it for years against old walls I had the impression that wistaria was too scanty-leafed to be suitable for a porch ornament. Properly pruned and trained the wistaria will develop a full foliage. Its most popular use, however, continues to be for climbing walls and covering trellises rather than for porches.

A score of other climbers present themselves. Everyone of course greets as an old friend the adventurous ivy, that inseparable companion of blank walls, forlorn ruins, old churches, and English novels. It has many forms suitable for mild climates. Its relatives, the Boston or Japanese ivy, and the Virginia creeper, offer a great spread of colored foliage in the fall. For the massive effect of big leaves piled thickly together do not fail to look up that curious-flowered vine with the appropriate name of the Dutchman's pipe. Then there is the Kudzu vine, of Oriental extraction, another heavy-foliage vine giving a dense shade and bearing also large racemes of purple blooms in midsummer. And don't forget the honeysuckles, or the greenbriers, or the climbing hydrangeas, or the many forms of clematis with their wealth of bloom of many colors, to mention only a few. They are named only as suggestions. The catalogues will carry on the tale.

"But the roses?" I hear you say with some impatience. "What about the roses?"

There is very much about them—far too much indeed to be contained in many books, although many books have been written on them. For the newcomer in flower raising who sets out to learn what he can about roses, the first approach to the subject is like standing at the entrance to one of those dream-gardens of our childhood fancy. There are hundreds of different kinds of roses, and scores are added each year. Among them is a due proportion of climbers.

Faced with this bewildering array, no doubt, as a novice, we have rather a lost feeling. As merely one unit of the great general public we have been used to thinking of roses in terms of color, or as "double" or "single", or as single-blooming or ever-blooming. But talk to a rose-grower and you will be quickly swamped with a flood of names—"Noisette", "Dorothy Perkins", "Tausendschön", "Maréchal Niel", "Heart of Gold", "Emily Gray." How are you to pick out the kinds you would like to see bursting into glorious bloom on your veranda or garden trellis?

Catalogues will help. Excellent rose books are available. But perhaps one of the best ways, simply to make a start, is to take a list selected as preferred varieties by American rose-growers themselves. Formerly the American Rose Society took an annual referendum among its five thousand members on the favorites in several rose classes. Each year the favorites were much the same—so much so, in fact, as to arouse a good deal of protest over this "static referendum", which seemed to disregard many fine new creations, and it was discontinued. But the beginner will find the lists helpful.

For 1927, the favorite half-dozen climbing roses, as listed in the *American Rose Annual,* published by the American Rose Society, included old friends. There was the well-established leader of climbers, Dr. W. Van Fleet, described as having "soft flesh tint shading to delicate peach pink", which blooms well in the spring, with scattering blooms later, and which has excellent foliage. Paul's Scarlet Climber, "by all means the most brilliant rose known", in the words of one enthusiastic dealer, was also chosen. It has large, semi-doubled, vivid scarlet flowers, in big clusters, which last unusually long, and is very hardy. The others selected were Silver Moon, with its large, open, semi-double flowers of pure waxy white, with yellow stamens and glossy foliage; American Pillar, a crimson flower with yellow stamens, a pink center, and white at the base of

THE PERGOLA AT ARLINGTON CEMETERY
Climbers add peaceful charm to the last resting place of national heroes

the petals, and an excellent grower; Mary Wallace, distributed by the American Rose Society and one of the creations of Dr. Van Fleet, perhaps the most renowned of American rose-breeders, who developed in this bloom four-inch semi-double flowers, with petals of bright pink and salmon-colored base, and Climbing American Beauty, with large double flowers, ranging in color from carmine to pink.

Starting with these half dozen you can quickly range out into a wide field, taking your pick from hundreds of varieties.

Where did they come from, these fairest of all the tribe of flowers? In his excellent book, *The Rose in America,* Mr. J. Horace McFarland quotes a memorable passage from Mr. E. H. Wilson, above mentioned, which is well worth a second reproduction:

"I wish I could take the reader of this work to the mountain fastnesses of central and western China, and to certain remote parts of Japan, and there introduce him to the wild types—the raw material—from which have been evolved our Killarney, American Beauty, Lady Hillingdon, Mme. Caroline Testout; our rambler and Wichuraiana hybrids and innumerable others, and his astonishment would be profound. Truly it hardly seems credible that the roses of today had such lowly origins. Be it remembered that our present-day roses owe their principal origin to forms cultivated, we know not how long, by the flower-loving Chinese."

That statement is particularly true of the so-called climber types, the great majority of which are hybrids of two Oriental varieties, *Rosa multiflora* and *Rosa wichuraiana.* It was a child of the former, our old friend Crimson Rambler, which may be said to have established the vogue of the climbing roses when it spread far and wide after being introduced from England in 1894. It was found to be subject to mildew, and has largely given way to a later edition of itself, Excelsa. The parent of the Wichuraiana tribe is a white-flowered rambler known as the "Memorial" rose.

As for the actual buying and planting of your climbing roses there is nothing mysterious about the process. You decide on what you want and order the bushes from some dependable dealer, at a dollar or so apiece. They should come in the form of two-year-old field-grown bushes, and you can plant them in the fall or early spring. Give each five or six feet of space, dig the soil down a foot or more and mix with it stable manure or commercial fertilizer. The drainage must be effective. When the bushes grow they must be sprayed, perhaps, and trained, and pruned after the roses are gone—but these are things to be learned as you go along, from other growers, or from books, or from your own common sense, or from all of them put together.

The year takes on a new meaning when one has planned and planted and trained the plants that make a mere back-yard into a beauty spot. From a succession of dragging months it becomes a round of delightful seasons, each with its special appeals and absorbing interest.

No, it is not difficult to make your house and grounds a picture out of a story-book. But while you are at it don't forget that plants are living things. And that means that you may handle them best by gathering them into the fold of your genuine affection. At first they may be just the means through which you plan to make your habitation a more delightful place to live in. Presently—who knows?—you may come to regard your porch and house-wall and fence and garden as simply so many conveniences for the accommodation of your floral friends.

WHERE CLIMBERS SHOW THEIR EFFECTIVENESS

The country home of General W. Y. W. Ripley at Mendon, Vermont, illustrates the beauty achieved by vines

MAKING A FINE SOFT SHIRT
This Indian miss works on a deerskin with the leg bone of a deer, used as a draw-shave

INDIAN BUCKSKIN

IT STILL IS TANNED IN THE SAME OLD WAY

BY DOUGLAS LEECHMAN

TO THE American Indian, skins were among the most important of natural resources. In the form of furs, rawhide or leather they served a multitude of purposes. Almost every animal whose skin was large enough to make the work of removing it worth while was used by at least one tribe. Among the more common were buffalo, elk, moose, deer, antelope, beaver, muskrat, ermine, rabbit, several varieties of birds, seal, walrus and even salmon and dog-fish.

Many of the tribes had evolved very effective processes for treating the skins, and for making and dyeing leather. Thus the Omaha made a blackish-blue dye by combining the bark of the white maple with pulverized and roasted yellow ochre. Several of the prairie tribes used the juice of the prickly pear as a mordant to fix their painted designs on rawhide, and used roasted liver to counteract its effect when the old designs were to be removed.

Buckskin was a valuable material both on the prairies and in the dry belt which stretches from the central interior of British Columbia south to the desert. The finer grades, usually made from the skins of does, were of very excellent quality and the methods of smoke tanning which these Indians employed, and for the matter of fact, still use, are of decided interest.

The deerskin is first dried and the flesh side is then gone over with a stone scraper, which is not unlike an oyster shell in shape. This tool is fastened in the end of a split stick, about four feet long, and is used with a working stroke away from the scraper. When all shreds of fat and tissue have been removed the skin is rubbed with a dressing of decomposed deer-brains, together with marrow extracted from the long bones, or oil from the heads of salmon. It is then folded up and put away in a cool place, and this process is repeated daily for two or three days, when the skin will be quite soft and oily. If it is desired to leave the hair on and to use the skin as a robe or blanket, it is now dried once more and the process is complete. Drying is usually done on a bright, warm day, but if the weather is unsuitable it may be done by a fire.

REMOVING THE WATER
Grass is rolled up with the skin before it is twisted, to absorb water on the inside

Finer leather, for shirts, gloves and moccasin uppers, is made in a somewhat different way. After the skin is first dried, it is soaked in running water for several days. It is then hung loosely on a log which is about five inches in diameter and four or five feet long, and has previously been peeled and smoothed. This log is propped against a tree and the hide hung over the upper end in such a way as to hold it between the log and the tree. It is then scraped with a special tool, something like a spoke-shave, made from either the leg bone of a deer or the rib of a horse. The ends of this tool are bound with sagebrush fibre to protect the worker's hands. Nowadays, steel knives are frequently used, but they are more apt to cut the hide.

Once the inside is finished, the hair side is treated in

U OF I

the same way, both hair and outer cuticle being removed. The hide is then hung over a pole to dry, after which it is smoked while stretched on a framework of poles which hold it at an angle of forty-five degrees over a small smoldering fire. Various kinds of wood may be used for this purpose; fir bark, broken up into small chips and mixed with the cones of the yellow pine, is considered to be the best material. Sagebrush is also used frequently. If a dark color is wanted, a little juniper wood is added to the fire, and corn cobs are found to give a bright yellow.

Usually an old blanket is thrown over frame, fire and all to retain as much of the smoke as possible. When the desired shade of buff has been reached, the hide is turned over and the smoke allowed access to the other side. Then the hide is soaked in water once again, this time for a little more than a day. Soap is sometimes added to this water, since the coming of the white man. When taken out of this bath, it is rolled up into a long cylinder, together with some clean, dry grass. One end of the roll is fastened to a stump and the other to a short strong stick. Then the hide is twisted as tightly as possible and the water forced out; the grass on the inside aids in absorbing the water expressed from that side of the skin.

After being dried once more, the hide is again laced to the frame which is propped against a tree and the skin is pounded with blunt sticks until it is quite soft and pliable, after which it is again smoked as before, often with a second, hotter fire nearby to speed the final drying. Most of this work is done outside the house, but in bad weather it may be carried on indoors.

CUTTING AWAY FLESH AND CUTICLE

A stone scraper, not unlike an oyster shell in shape, prepares a deer skin for use. The task is not an easy one, and requires considerable patience

PREPARING SINEW THREAD

The Indian holds the thread in her mouth and twists it. Sinew is still much used in the North

Patterns are seldom used in cutting leather for clothing, the forms being carried in the worker's memory and passed on from mother to daughter. In the old days, needles were made of bone or horn. A hole was punched through the buckskin with a bone awl, and the needle was used to lace the thread through. These bone awls are still used for the thicker grades of leather but steel needles and sewing machines have made their appearance in recent years. The thread used was originally of sinew, twisted into threads on the woman's thigh, and this material, which is very strong, is still used to a certain extent. An inferior grade of thread was made from willow bark and another from what is locally known as Indian hemp, *Apocynum cannabium.*

Most of the more delicate work, such as gloves, shirts, and the uppers of moccasins, is also decorated with embroidery. The oldest method of which we know was with dyed porcupine quills. Later, and after the arrival of the white man, dyed horsehair was used. Then came beads, and in many places, silk embroidery thread,

and the original geometrical designs have been almost entirely supplanted by floral patterns of European origin.

Buckskin is still used to a large extent by these people and the old smoke-tanning method is followed very closely.

THE WOMEN AS WELL AS THE MEN

It is said that when it is made in this way, it stretches and pulls less when it is wet, but nevertheless I have more than once seen an old woman take off her moccasins and carry them when she saw that a thunder storm was to be expected.

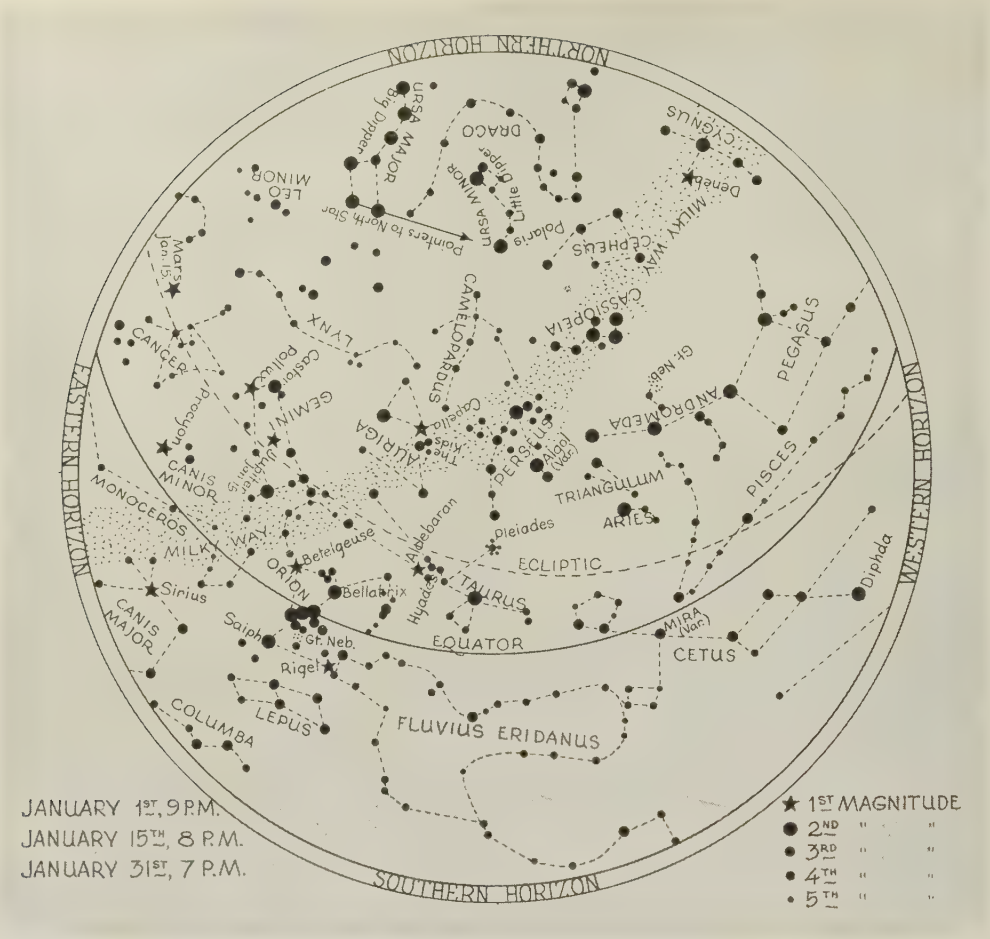
The arduous labors of preparing skins fall on both sexes. The deer skin will soon be ready for tanning

A GROWING BOWER

BY CHARLES ALMA BYERS

THE accompanying illustration shows a delightful garden retreat, furnished with a table and a seat, the thatch-like covering of which is formed by the slender, flowing branches of a weeping mulberry tree. Since a weeping willow or any more or less similar tree may, by a little training, be thus utilized, there is presented in the retreat an idea that, perhaps, other garden owners may be able to adapt with equally satisfactory results. The tree is pictured at its dormant season, when it loses its leaves, but in a short time thereafter it becomes a solid mass of green, not only completely covering the retreat but virtually closing it on all sides as well.

To hold the branches at the desired height, as well as to cause them to form an enclosure about the sides, a loose framework of platform style, supported at the four corners by iron piping, is erected about the trunk of the tree, at an elevation of about seven feet. This platform, comprised only of a few widely spaced boards, is approximately ten feet square, and hence gives corresponding dimensions to the interior. Around the trunk of the tree is also constructed a circular table, with boards for its top and four small poles constituting its legs. The table is twenty-eight inches high and has a diameter of thirty inches. The seat, consisting of wood and artificial stone, was purchased for the purpose. The area enclosed is paved with cement, and an electric light makes of the feature a retreat that may be enjoyed at night, as well as during the day. It is one of the most delightful of bowers.



To use this map hold it before you in a vertical position and turn it until the direction of the compass that you wish to face is at the bottom. Then below the center of the map, which is the point overhead, will be seen the constellations visible in that part of the heavens. It will not be necessary to turn the map if the direction faced is south

STAR-GAZING WITH BINOCULARS

WITH THIS AID, 50,000 MORE STARS ARE VISIBLE

BY ISABEL M. LEWIS

IF YOU want to get the most fun out of star-gazing do not fail to provide yourself with a good pair of binoculars. In addition to your monthly star map, which will show the position of the most conspicuous constellations, the brightest stars and planets, you may well invest in a good star atlas. This will show stars much fainter than those on the sky map and, in addition, the stars that are double will be indicated as well as the positions of star clusters and nebulas. Usually a descriptive text will accompany the atlas indicating what objects are within reach of binoculars and small telescopes.

Within the reach of the naked eye on a clear, dark night there are about two thousand stars but with the aid of binoculars you will see thousands of additional stars. The Milky Way will be transformed into a beautiful stream of tiny, glittering points of light. If your glasses are particularly good and the visibility is fine you may see the four moons of Jupiter that were discovered by Galileo and are usually known as the four historic moons.

Your star atlas should also contain a good map of the moon showing the principal "Seas," which are in reality great plains, the most conspicuous craters such as Tycho, Plato and Copernicus, and the great lunar mountain ranges, such as The Alps and The Apennines. All of these you can easily recognize with the aid of binoculars. Tycho's Rays are best seen at time of full moon but this is not a good time to view the lunar craters or mountains as they do not then stand out in relief and there are no shadows cast at the time of full moon. The best time to see the craters and mountains of the moon is when the moon is crescent or slightly gibbous, that is when its age is between two and eight days. If you observe the

lunar markings during this period you will be surprised at the interesting changes that take place in the appearance of the craters and mountains as the sun rises, passes overhead, and sets upon them in the course of the lunar day. With very little effort one can learn to recognize the largest of the lunar seas by their names and several of the most interesting mountain ranges and craters, and it will add to the interest with which we regard our fair satellite to know the names of its most conspicuous features and to be able to recognize them.

One should choose a night when the moon is absent from the scene, however, to explore the Milky Way and to hunt for star clusters, double stars or other interesting objects. Experts in star-gazing will soon come to recognize the nights of fine seeing and to take advantage of them. Before attempting to search for particular objects of interest, such as the Great Nebula in Orion, Praesepe, or The Beehive, in Cancer, the two great star clusters in the Sword Hand of Perseus, the Great Nebula in Andromeda, the two famous clusters of the Pleiades and Hyades in Taurus with binoculars, it is necessary to be well acquainted with the principal constellations and their brightest stars. Then one can use these as reference positions for identifying star clusters, nebulas and other objects found with the aid of binoculars. Astronomy with binoculars might be looked upon as an advanced step over simple identification of conspicuous stars and constellations.

For example, suppose we have learned to recognize readily the W in Cassiopeia and the brilliant Capella in Auriga. Then, with the aid of our binoculars, we are ready to hunt in that region of Perseus, often called the Sword Hand, that runs like a festoon of stars between Cassiopeia and Capella, for that splendid double cluster that lies at its upper end near Cassiopeia. When we have come to know the inconspicuous constellation of Cancer we know where to look for that coarse cluster of stars easily within the reach of a field glass and known as Praesepe, or The Beehive. As soon as we know Orion we can explore with our glasses that wonderful region in the Sword Handle where the multiple star, Theta, is embedded in the heart of the most magnificent of all gaseous nebulas, The Great Nebula in Orion. Then there are the beautiful clusters of The Hyades and The Pleiades in Taurus that increase in beauty when viewed with the aid of binoculars.

Another remarkable region that to the naked eye is inconspicuous and devoid of interest is in the constellation of Monoceros, or The Unicorn, which lies east of Orion and between Canis Major and Canis Minor. This is a brilliant region of the Milky Way and it contains several interesting star clusters, one of which is visible even to the naked eye. This cluster lies north of the line joining Betelgeuse to Procyon, one-third of the distance from the former. Another cluster in this constellation, visible through glasses, lies between Sirius and Procyon, about one-third of the distance from Sirius. The Milky Way would also be well worth a scrutiny in the constellations of Perseus and Cassiopeia. Of course one should not fail to search for the Great Nebula in Andromeda, that wonderful island universe that has been so magnificently photographed with our greatest telescopes and which may be glimpsed even with the naked eye on a clear, dark night. Its position is indicated on our sky map for January. The distance of this far-away universe is about one million light years.

Double stars will be found now and then as one sweeps over the brilliant winter constellations but most double stars require a greater optical power than is furnished by binoculars to resolve them into their two components. Gemini is particularly rich in double stars as are also Andromeda and Cassiopeia but most of them are beyond the optical power of the best binoculars. Mizar, the star at the bend in the handle of the Big Dipper, forms a wide double with Alcor that is visible even to the naked eye. The two are known popularly as The Horse and Rider. The brighter star is also double and one of the most beautiful stars of this type in the heavens but one needs a small telescope to separate it.

As Jupiter is now well in view in Gemini this is a good time to try to find its four Galilean moons. As their positions with reference to Jupiter change rapidly, one should try to observe them from night to night. At times one or more may be hidden from our view behind the planet or invisible in its shadow or again may be passing between us and the planet. In a small telescope it is particularly interesting to watch the varied phenomena of these small moons of Jupiter, when they can be seen passing between us and the planet and casting their shadows upon its surface.

Both Jupiter and Mars come into opposition this month, Jupiter on the sixth and Mars on the twenty-seventh. On the date of opposition the planet will be above the horizon all night from sunset to sunrise. Jupiter is in Gemini and Mars in Cancer. This is the most unfavorable opposition of Mars. The planet will be nearest the earth on January 25 but will be more than 61,000,000 miles distant at that time, as compared with 35,000,000 miles at the most favorable opposition. Saturn will be in conjunction with the sun on January 5 and so will be invisible all of this month, appearing next in the morning sky. Venus is now a brilliant morning star rising about three hours before the sun. Mercury reaches its greatest western elongation on January 28 when it may possibly be seen low in the southeast before sunrise. This is not a favorable time to observe this little planet.

The little asteroid Eros, less than twenty miles in diameter, will be nearest the earth on January 29, when it will be only 16½ million miles from the earth. It will appear as a faint star of the seventh magnitude and could easily be picked up with an opera glass if one knew where to look for it. It can be distinguished from faint neighboring stars by its rapid motion. When nearest the earth it will be in the constellation of Hydra about fifteen degrees south and a little east of Regulus and will be on the meridian about midnight.

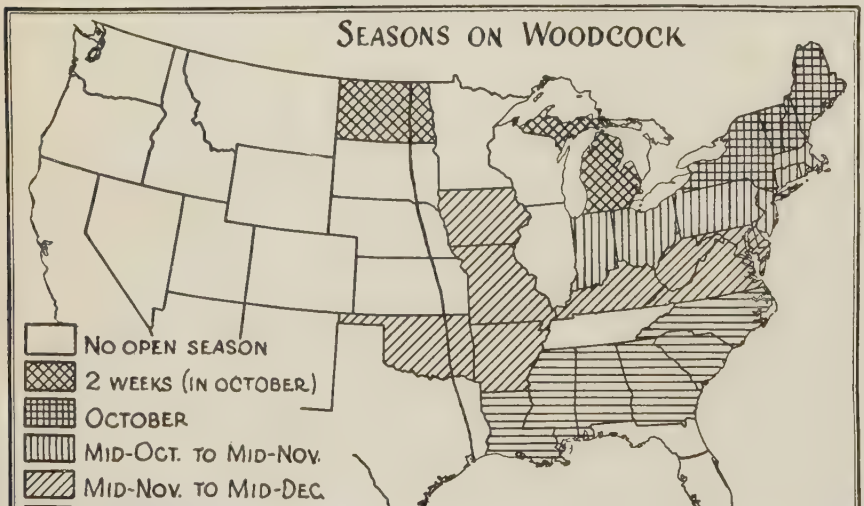
THINGS TO THINK ABOUT

A PAGE DEVOTED TO CONSERVATION FROM VARYING ANGLES

The Woodcock and His Hunting

On the map below are shown the principal range in the United States of the woodcock, and the status of its protection. It breeds over the entire area, and winters chiefly in the southern tier of states, from the Carolinas to Louisiana. North of our border the bird breeds in Manitoba, Ontario, Quebec, New Brunswick, Nova Scotia and Prince Edward Island. The more eastern of these provinces, and our northeastern states, now furnish the bulk of the birds that, in their southward flight, furnish sport for the gunner. In the Canadian Provinces mentioned, the open seasons begin as follows: Manitoba (closed); Ontario (September 15); Quebec (September 1); New Brunswick (October 1); Nova Scotia (October 1); Prince Edward Island (September 15).

The woodcock has long been a favorite with the sportsman, and under modern intensive pursuit it has decreased alarmingly



over most of its range. This fact has been recognized by the legislatures of several of the states, as indicated on the map. In other states, where the bird is equally in need of total protection, the influence of the sportsmen has kept it on the game list.

The woodcock, being a migratory species, has also the protection of the Federal Government. Alarmed by its condition, the friends of the bird have ably urged that total protection be given it. Though this relief has been denied, so good a case has been presented that the Federal season has been reduced to one month.

A study of the map will reveal how this works out. The sportsmen in each state (so far as they can agree) exert their influence to have this month embrace the time of the birds' maximum abundance. In consequence the northern-bred birds must run the gauntlet of successive zones of gunners. In Quebec, as we have seen, the season opens on the first of September. In the next zone, including most of our northeastern states, the season continues during October. Next it gradually merges into November, and in the bird's real winter home, where it would rest a while before starting north again to its breeding grounds, the month is December. So to many of the birds the open season is four months long, just as it was before the special dispensation.

But let us not fail to note those states, unmarked on the map, that have taken cognizance of the bird's plight by forbidding its killing at any time. Of these Florida and Texas, with South Dakota, Nebraska, and Kansas, harbor woodcock only over a part of their territory. But Minnesota, Wisconsin, Illinois, and Tennessee, originally good woodcock states, but now robbed of most of their birds by excessive slaughter in the wintering coverts of the southern states, have forbidden its killing within their own borders. And all due honor to Michigan, North Dakota and Rhode Island, which have chosen not to avail themselves of the Federal season, but allow only about two weeks' shooting.

We are sorry to note in some of our game legislation this tendency to forget that the Migratory Bird Treaty was intended to help the birds to live, rather than to justify open seasons that facilitate their killing. There is constant rivalry between the states along the migrating paths of our game birds to obtain seasons that will insure the largest bags.

When we realize that our woodcock is confined to this comparatively small area in eastern North America, and that it has only two close relatives, both in the old world, and that its tribe represents a unique combination of characters, we can hardly fail to wonder why we continue to allow the species to be subjected to such persecution. Surely a bird like this was created for some better purpose than to serve as a target for the shot gun.

Conservation Inquiries

Two matters of interest to conservationists, on whatever side of the fence they may sit, have recently been aired in a preliminary way and are to be further aired. One of these is the policy of using poison against predatory animals, as administered by the United States Biological Survey. The other is concerned with certain charges brought against the administration of the National Association of Audubon Societies.

Certainly debatable is the Biological Survey's poison policy. There are two sides, both fairly vociferous. The opposition has found expression in several directions, notably a special feature of the *Journal of Mammalogy*, quarterly of the important American Society of Mammalogists, and an emphatic pamphlet entitled *The United States Biological Survey*. This last is the work of Davis Quinn, secretary of the Emergency Conservation Committee. Contention is made that the poison policy is unnecessary, expensive, ineffective, a menace to harmless wild life and based on false premises. Defensively it is claimed that it is effective, and necessary in the interests of the stockmen.

Such allegations, so authoritatively rendered, cannot be ignored. The result, a committee of investigation. On this committee, for the Biological Survey, are Edward A. Goldman, Vernon Bailey, Chief Field Naturalist of the Survey, Samuel B. Locke, Walter P. Taylor and O. J. Murie. For the Mammal Society committee we have H. E. Anthony, G. G. Goodwin and T. Donald Carter of the American Museum of Natural History, New York; E. L. Sumner and E. R. Hall representing the Museum of Vertebrate Zoology, Berkeley, Calif., and C. T. Vorhies of the University of Arizona at Tucson. This is an outstanding committee of high ability and equal integrity. Final opinions should wait upon its findings.

The attack of the Audubon Society centered principally on T. Gilbert Pearson, President, is less imposing in array but is also vociferous. It finds latest voice in a pamphlet, *Compromised Conservation*, authored by Irving Brant and issued by the Emergency Conservation Committee. It charges Dr. Pearson with lending too attentive an ear to shooting interests, opposing reduction of bag limits, and generally failing to be a militant friend of birds and mammals. The contentions took form in insurgency at the recent annual meeting of the National Association of Audubon Societies. Dr. Pearson defended his policies and was accorded a strong vote of confidence. Result, however, was another committee, appointed at the meeting, to investigate the charges. It is also an able and presumably unprejudiced group, consisting of Chauncey J. Hamlin, Alexander G. Ruthven, president of the University of Michigan, and Thomas Barbour, noted curator of the Museum of Comparative Zoology at Cambridge, Mass.

Both the United States Biological Survey and the National Association of Audubon Societies have positions of too great importance in the conservation structure to be under any cloud. It is hoped that the investigators will study carefully and find impartially; that their results will have such strength of authenticity as to leave no doubts. True conservation is too vital in this period of our national life to suffer the delays of even justifiable controversy. R. W. W.

ORCHID LOVER

(Continued from page 32)

ways be dewy fresh; that when its delicate
als begin to wilt, the power of his at-
k is said to weaken. There is this much
—call it sentimentality, if you will—
out a man who, at the age of twenty-one,
s earning more than seventy-five thousand
llars a year!

Even in an office where some of the
st important transactions in American
al and financial history have taken place,
e receives an impression, primarily, of
wers. You open the door and look into
immense square room. And above a great
t-topped desk your glance is caught by
pair of astonishingly bright, clear, blue
es in a leonine head which appears to be
med in an arch of orchids—the head of a
n the late William Jennings Bryan al-
ys called "America's greatest lawyer."

Samuel Untermyer, past threescore and
, is erect, energetic, sunbrowned—a
endid example of the true Nature-lover.
e unceasing enjoyment he finds in his
wers—although he still works twice as
ng and twice as hard as most men half his
—is a magnificent symbol of the pleasure
be found in the intelligent and zestful
suit of a Nature hobby.

MY JUNGLE STUDY

(Continued from page 14)

ing him off the beaten ways. The heavy
de certainly stood him in good stead
s day. But the trail he was expecting to
me out upon did not appear. Hour after
ur he slashed and hewed ahead, and
en he did emerge, it was to find himself
on an unexpected trail in an utterly dif-
ent part of the jungle. He had been mis-
en about the inlet, and his reckoning
th the compass had been wrong, so very
ssible, and so very unpleasant on a small
and, and in only six square miles of the
gle. For anyone except our botanist, the
ation might have been attended with
ious consequences.

All that sounds scary, and the botanist
uld pooh-pooh the whole story, though
ave barely sketched it here, and with the
most restraint. But the moon was behind
that, not the jungle. I was speaking of
"atmosphere", of the shapes that move
out us here on Barro Colorado Island,
d the sounds that break in upon our
dy. The place is incredibly rich with
ld rain-forest life. I may come back tired
d excited and alive with ticks from my
in the woods to the privacy of my small
dy, and shut myself resolutely in with
ticks, seldom managing, however, to
ld out to the end of my journal. Night
uld be something of a protection from
distracting shapes were it not itself all
p-, moving restlessly about in a hundred
st rious forms, for all the beasts of the
t do creep forth in the darkness, and
y sound prowls just outside my win-
ws, big and black as no real thing can
b day. The great cats come out on the
ls then and get their pictures taken,
sing the whole Island to jump as the
explodes with a muffled roar.

be completed in the February issue]

Helps and Hints
FOR HOME AND GARDEN

PLANTING THE GARDEN, MONTH BY MONTH

By Romaine B. Ware

With the advent of the new year, gardeners eagerly look forward to spring and the awakening of Mother Nature's plant children. We do not begrudge them their long winter rest, but we will not be sorry when it is over. And don't forget spring will soon be here with its countless tasks to be done; so if you would be ready for her awakening, there is plenty to keep you busy in the next few weeks. If you neglect the tasks that may be done now, you may not find time during the spring rush.

Late January is not too early to plant such slow germinating seeds as lobelia, centaurea, petunia, salvia and torenia. Not only are they slow getting started but they grow slowly, and to have good plants when the outdoor planting season arrives you had better get busy. Seed can be sown in pots; the large, shallow ones called bulb pans are ideal and just as soon as the first true leaves are made, the young plants should be pricked out into flats or into tiny pots. As a general thing, flats are the more satisfactory and there is less danger of their drying out or being over-watered. A given quantity of seedlings will take up much less room in a flat than in pots.

The soil for planting seeds must be made very fine and should contain sharp sand and finely sifted leafmold. Both of these will aid in keeping it from packing and the leafmold will help it to retain moisture while still leaving it highly porous. The depth at which you plant seeds will depend upon their size. Tiny ones need to be merely pressed into the surface and larger ones covered about four times their diameter. Seeds do not need light to germinate, just gentle heat and moisture, but as soon as they show above the soil, light and ventilation must be provided. It is well to place a glass over the seed pan to aid in maintaining even temperature and conserve moisture, but as soon as germination takes place the glass must be removed.

Seed kept over from previous seasons seldom germinates as well as fresh seed though some varieties will do very well. If you contemplate using any old seed, it will be wise to test it. This may be accomplished by planting a given number of seeds and checking carefully upon the percentages of germination. Be sure that careless handling and watering do not affect the results and nullify them. Some seeds gradually lose their power to germinate as they become older and then when five years old seem to come back. Some interesting tests are being undertaken along this line. Of course, we know that in the open fields and woods seeds keep for years and then, seemingly by chance, germinate.

(Continued on page 59)

Burpee's Seeds Grow

free Garden Book

IN PLANNING your garden, consult Burpee's Annual Garden Book first! It offers the finest and widest possible information and selections for growing more beautiful flowers and more improved vegetables. It tells you how to succeed with your garden and offers you an opportunity to get more pleasure and profit from it.

Market Growers and Florists use Burpee's Annual as a reference book—more than a million amateurs use it as their garden guide.

New Vegetables and Flowers

Read all about the new rich orange tomato "Burpee's Tangerine" with golden orange flesh—as distinct in flavor as in appearance. New Sweet Peas, including "The Burpee", the loveliest ever introduced. New Giant Dahlia "Asbury Park"—strawberry-red shaded salmon and old gold . . . and many others.

Write for your copy of Burpee's Annual today. It will be mailed to you free and postpaid

Tear Here

W. ATLEE BURPEE CO.
278 Burpee Bldg. Philadelphia, Pa.
Send me a free copy of Burpee's Annual Garden Book.

Name.....

R.D. or St.....

P.O.....State.....

WESTERN TRAILS

VOLUME 1 JANUARY, 1931 NUMBER 1

"Western Trails" is the Alumni Bulletin of the folks who have followed the trails with the American Nature Association. It is dedicated both to those who have graduated from these fine summer experiences, and to those who have indicated an interest in the trips but who have not yet graduated from a trail trip

TRAIL MEMORIES REVIVED AT NEW YORK REUNION

Alumni of 1929 and 1930 Parties Meet and Make Merry

Arrayed in ten gallon hats, with bright-colored scarfs draped about their necks, more than fifty veterans of the American Nature Association western trail trips met in happy reunion at the Hotel Pennsylvania, New York, Saturday evening, November 8. They met as the Vagabonds of the Trail and they perpetuated the spirit that had brought them together by transforming the reunion into a permanent organization of Vagabonds.

"Pop" Hall, Glacier-Jasper '30, came all the way from Ottumwa, Iowa. Marion Clouse, Glacier '30, travelled from Canton, Ohio. Katy Huber, Glacier '29, Jasper '30, took the air route from Indianapolis. "Peattie" Crisp, Glacier '29, Jasper '30, came from Buffalo, and Professor Phil Schneider and sister Elizabeth, Southwest '30, travelled down from Syracuse. Caryl Haskins and his mother, Yellowstone—Jasper '30, shook the dust of Schenectady from their heels to be on hand. Folks from other places outside New York came too, undaunted by distance, but he who came the farthest was "Doc" Ruhle, genial park naturalist of Glacier, travelling all the way from Belton, Montana.

The groups began gathering Friday and several impromptu dinner and theater parties were organized. Saturday afternoon sixteen took in the Illinois-Army football game and saw Doc Ruhle's alma mater fight vainly for victory. Meanwhile back at the Pennsylvania, others were recalling that particular bit of trail over Gunsight Pass; or when somebody's hat blew over on the Glacier; or that tough-gaited white horse in Jasper; or the wetting in Baring Falls; or the thrilling trip up Kitlup River.

"Come and get it", was the call a bit after seven, after heads had been fitted to rakish, wide-brimmed hats and necks draped in scarfs of lurid colors. At the places at table little favors recalled some incident of the happy days on the trails.

Nettie Wilson, Jasper-Glacier '30, presided at the meeting, welcoming the Vagabonds. Katy Huber moved that the organization be made permanent and that Nettie be President and Dick Westwood, Glacier '29, Jasper '30, Secretary-Treasurer. The vote was unanimous. "Dad" Field, Glacier '29, was pressed into service as toastmaster and introduced Doc Ruhle.

Eloquent as ever, Doc touched upon the ideals of the Park Service and the aims of its educational branch, emphasizing the great value that comes from an intimate understanding of what these wonderful national possessions hold. Raymond H. Torrey talked briefly and in light vein. Dick Westwood read greetings from Art Staton, Glacier guide extraordinary; Helen Dolman, Glacier '29; Skipper Higgins of the *Caroline;* Fred Brewster, of Jasper, and others.

Then came Arthur Pack, President of the American Nature Association, with his incomparable movies of the trails and the country those present knew so well. Movie entertainment was also provided by the films of Caryl Haskins, "Van" Hommel, Glacier-Jasper '30, Phil Schneider and Uncle Walt Little, Jasper '30. One of the parlors used for the reunion was decorated with original paintings made by Flora Little, Glacier '29, Jasper '30.

Sunday morning had come before the meeting was over. Some sad goodbyes were said then, others postponed the inevitable until the next morning. The first reunion of the Vagabonds of the Trail was a great success.

In addition to those mentioned before as present were:

Martha E. Bowen, Yellowstone-Glacier '30; Anne Koffinke, Glacier '29; Josephine Davis, Jasper '30; Helenita Topping, Glacier '29; Alice Barnes, Glacier '29; Kingsland Camp, Glacier-Jasper '30; Podge Field, Glacier '29; Franziska Schneider, Glacier '29; Helen Pelton, Glacier '29; Grace Smith, Glacier '29; Edna Townsend, Glacier '29; Laura Juker, Rebecca Holmes and Adele Potts, Glacier '30; Myra Hunter and Edith Lathrop, Glacier '29; Mr. and Mrs. Harry Radcliffe, Southwest '30; Betty and Pat Ridsdale, Glacier '29, Glacier-Jasper '30; Kitty Peabody, Glacier '29-'30; Paul Hannah, Glacier '29-'30; Mr. and Mrs. Russ Edwards, Yellowstone '30; Eddie Westwood, Glacier '29, Jasper '30; Dorothy Jameson, Jasper '30; Warren Wilson, Jasper-Glacier '30; Bunny Ebinger, Glacier '29; Rosali Ecaubert, Jasper '30; and Marger Hayden, Jasper '30. Guests wer Mr. and Mrs. P. S. Ridsdale, M and Mrs. Arthur Newton Pack Betty Jackson, Mr. and Mrs. E. H Whitlock, Dr. Glenn Jepsen Margaret Peters, Sophie Wilso and Mr. and Mrs. M. W. Maxwel

CARIBBEAN TRIP DRAWS INQUIRIES

Many Interested in Nature Visit to Tropic Lands

Although different in character from the western trail trips of Nature Magazine, the Caribbean trip on the *S. S. Caledonia* under the auspices of the Magazine has aroused remarkable interest. Despite delays caused by the lack of plans of the ship, bookings have been made merely on account of the confidence in the field trips of the American Nature Association.

After extended correspondence and varied contact, the details of the various shore trips have been worked out. These trips all vary from the conventional excursions since it is the object of the Nature Magazine party to seek out those things of special interest rather than to be contented with the usual shopping and sightseeing shore trips.

The Caribbean party will be under the leadership of Mr. Thomas H. Gill, forester of the Charles Lathrop Pack Forestry Trust and specialist in Tropical Research. Going along as members of the party will be the President of the American Nature Association, Mr. Arthur Newton Pack, and Mrs. Pack. The group will sail from New York on January 24, and any inquiries about the trip will be handled quickly up to a reasonable time before sailing. These should be addressed to the Director of Field Trips, Nature Magazine, Washington, D. C.

PLANS FOR 1931 WESTERN TRAIL TRIPS MATURING

The Canadian Rockies and Yosemite Added for New Year

Plans for the 1931 Western Trail trips of the American Nature Association are rapidly reaching final form. It is expected that definite announcement of these trips will be made in the February issue of Nature Magazine and that the 1931 booklet on the trips will be available shortly after the first of the year.

Jasper National Park, Canada Glacier National Park; Yellowstone National Park; the Grand Canyon, Bryce and Zion National Parks—all included during 1930 —will again be objectives of the Nature field trips. In addition definite trips will be scheduled to the vicinity of Banff and Lake Louise in the Canadian Rockies and to Lake Tahoe and the Yosemite in the Sierra Nevada. Two other provisional trips, contingent upon an adequate enrollment of members may be taken to Mt. Rainier National Park and to Rocky Mountain National Park.

The new trips to the Yosemite and the Canadian Rockies will both be trail trips. The former will be mainly a hiking trip. In fact plans are being made to offer where possible, the choice of horse transportation or "shank's mare." This is possible in a great many cases.

More than two thousand people have evidenced an interest in the Nature Magazine trips since they were inaugurated in 1929. To all of these the booklet "On Western Trails" will be sent as soon as it is ready. Others interested in considering the Nature Magazine trips in their 1931 plans may be placed on the list to receive the booklet merely by writing to Richard W. Westwood, Director of Field Trips, Nature Magazine Washington, D. C.

Vistas of Fairylands—

THAT'S just what the 1931 edition of my new catalogue proposes to open for you. It will introduce to you the most extraordinary plant materials for the making of most unusual gardens. It describes wildflowers and ferns, native shrubs and rock garden plants, and what is more, the illustrations show how all these plants may be used for prettiest effects right around the home grounds.

Write for your free copy of this unusual catalog right now and let it help you in the planning of gardens different from the common run. When writing please mention Nature Magazine.

GILLETT'S FERN & FLOWER FARM
7 Main Street
Southwick, Mass.

Big Money Growing GINSENG

Any one having a small plot of ground should raise Ginseng. It will make you a handsome profit. Ginseng now sells for about 700% more than several years ago. You will be well paid for the little labor it requires. *Write for FREE Catalog* which fully describes this *Big Money Making Plant*, also shows hundreds of bargains in trees, shrubs, vines, roses, evergreens, hedges, etc. We pay postage.

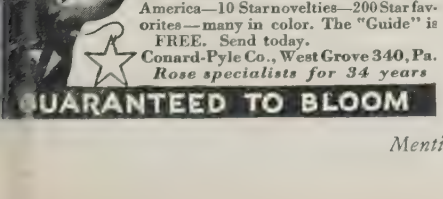
SPRING HILL NURSERIES
Box 308 **Tippecanoe City, Ohio**

EVERGREENS
AND BROAD LEAF FLOWERING EVERGREEN SHRUBS

Choice plants — Write for price list

Natures Rhododendron Nurseries
Bert E. Rains — Elizabethton, Tenn.

EVERY GARDENER AND GROWER WANTS TO KNOW how to improve the soil and grow more and finer vegetables, more and better fruit, the finest flowers, plants, trees and shrubs, hot house methods, etc. All told by E. C. Vick in 4 new books that answer problems and assure success. Price $6. Sent free on approval, payable $1 a month if satisfied. Send name today and get books at publisher's risk. Garden folder free. THEO. AUDEL, 65 W. 23 St., New York. Dept V2S



STAR ROSES

Plant guaranteed field-tested Star Roses—they bloom, or money refunded. The 1931 "Star Guide to Good Roses" shows the best roses for America—10 Star novelties—200 Star favorites—many in color. The "Guide" is FREE. Send today.

Conard-Pyle Co., West Grove 340, Pa.
Rose specialists for 34 years

GUARANTEED TO BLOOM

HINTS AND HELPS FOR HOME AND GARDEN

(Continued from page 57)

If you have any dahlia tubers stored away for the winter, you will do well to examine them once in a while to see that they are neither too dry nor too moist. They may get moldy and decay from too much moisture or suffer from dry rot. If stored too dry they may shrivel up and lose a large part of their vitality. By examining them at intervals you can regulate the air or moisture and forestall trouble before it becomes extensive. Gladiolus and other bulbs as well as cannas and tuberous rooted begonias should be watched also.

Have you cleaned your gladioli yet? Many amateurs neglect this till planting time and then do not have time to do it right. The winter months are ideal for this work. The old tops should be twisted off, also the dried up remains of last year's bulb. Bulblets growing around the bulb should be saved and planted out to grow on for future years. If your gladioli are choice named varieties, keep the bulblets separate; mark each lot with its name. Bulblets are the best source of new stock as old bulbs finally run out and produce inferior flowers.

If you are desirous of increasing your stock of bulbs at a minimum outlay, you can do so by purchasing bulblets and growing them into blooming size bulbs. Varieties like Mrs. W. H. Phipps, Crimson Glow, Giant Nymph and Mrs. F. C. Peters, all outstandingly fine glads, may be bought as low as eighty cents per thousand bulblets, Mrs. Leon Douglas and Tycko Zang at a dollar a thousand and hundreds of other varieties at various prices. Bulblets are also sold by the pint or quart even cheaper yet. I mention this now that you may study the price lists and decide what you will plant this year. There are hundreds of growers all over the country and you will do well to secure several price lists and study them carefully.

Did you ever think you would like a small greenhouse? The advertisements of them sound most interesting and there are many delightful adventures awaiting the fortunate owner. Not only may one enjoy the pleasures of gardening all during the winter months but with the aid of a greenhouse many kinds of garden activities may be engaged in that would otherwise be impossible. Plants may be propagated, seeds and cuttings started and the garden season advanced many weeks. Until you have a greenhouse and use it a year or two you will hardly be able to appreciate its advantages and pleasures. Small greenhouses may be purchased or anyone handy with tools can build one themselves. The residence heating plant, if it is hot water or steam, is frequently of sufficient capacity to stand the additional radiation. You must, however, realize that a greenhouse requires care every day in the year that there are growing plants in it. Heat, ventilation, moisture and spraying or fumigation cannot be neglected or you will pile up troubles that will rob you of all the possible joys.

Next to a greenhouse, a hotbed is the

(Continued on page 61)

How to Plant the HOME GROUNDS

—is the title of a booklet written by E. H. ("Chinese") Wilson, Director of Arnold Arboretum, world famous authority on plant life, especially to help the home owner achieve modern and more beautiful home grounds. Sent FREE upon request.

How To Make An Outdoor Living Room

—tells in detail how to plan and plant an Outdoor Living Room in modern style. Send only 10c for this comprehensive booklet.

Send This Coupon Today

NATIONAL HOME PLANTING BUREAU,
487 Union Bank Bldg., Davenport, Iowa
Gentlemen: Please send me booklets as checked,
FREE ☐ "How To Plant Home Grounds".
10c ☐ "How To Make An Outdoor Living Room."

Name.....

Address.....

VICK'S Garden and Floral Guide
Write for this FREE Book!

CHOICE new varieties, old favorites, and all about growing them. Rare colors, giant sizes. Many money-saving special offers.

Strong thrifty vegetables, beautiful flowers, luscious fruits. Vick's exclusive tests assure success.

America's pioneer mail seed house and foremost Aster growers.

The new Spring Books are going fast—write for yours today. Special reward for early orders.

VICK'S ROCHESTER ASTERS

Largest, most gorgeous grown. Comet type. Pkt. mixed colors, special, 10c.

Send me this Book

James Vick's Sons ROCHESTER, N.Y.
122 Pleasant St. *The Flower City*

Name.....
St. or R.D......
P.O. & State.....

***The Most Beautiful* SEED CATALOG**

175 FLOWERS IN FULL COLOR

Vaughan's Gardening Illustrated for 1931 is a complete year-book of modern gardening, combining with inspirational and instructive advice by experts, a complete list with pictures, prices and descriptions of everything a home gardener needs or desires. It describes 2000 different flowers, and contains 175 accurate color plates of annuals, perennials, roses, lilies, water lilies, and gladioli. It lists the tender, finely-flavored **Table Quality Vegetables** giving the vitamin value and mineral content of each. Special 1931 offer: The beautiful new Tassel flower, or Paintbrush (Cacalia) Packet 10c; catalogue sent with seed or alone, free.

CACALIA

VAUGHAN'S SEED STORE, Dept 36
47 Barclay St. New York City **10 W. Randolph St., Chicago**

Science and Literature

Studies in the Literature of Natural Science, by Julian M. Drachman, casts much light on the causes for the present popular interest in science. The book discusses the literary aspects of scientific writing during the last one hundred and thirty years, traces its effect on the modes of thought, and supplies a very adequate history of the scientific literature that set fire to popular imagination as nothing has done since the religious revivals of the eleventh and twelfth centuries. Mr. Drachman passes in review the works of Paley, Hutton, Lyell and de la Beche, during the first thirty years of the nineteenth century, and of Buffon, Lamarck, Robert Chambers and Spencer in the pre-Darwin era, but concentrates especially on the author of *The Origin of Species,* and his important contemporaries. The last part of the work deals with special types of scientific literature such as the creations of the synthesists, the popularizers of science, the natural history essayists and the writers on astronomy. Written for the lay reader, but establishing, as well, an excellent basis for study for the student, Mr. Drachman's book forms one of the first complete pictures of the comparatively recent change of thinking. Perhaps he treats scientific writing somewhat too gently, overestimating its literary qualities, and perhaps, too, he minimizes the part played by the schools and colleges which, through the lecture room, have spread scientific doctrines faster than any group of writings; but his studies of the great debates, his careful development of the history of scientific ideas and his thorough understanding of the effect of each new thought on the world at large make his book a valuable contribution to the scientific literature the author discusses. The book is published by Macmillan for $4.

P. F. H.

A Handy Flower Guide

Wild Flowers, a Nature handbook compiled by James Edmund Jones of Toronto, Ontario, Canada, comprises one of the most helpful guides to flowers issued for many months. The book contains photographs and accompanying brief descriptions of two hundred and seventy-two common flowers, in addition to a small collection of Nature poems, advice on herbariums and a plea for wild flower preservation. The photographs, by Richard S. Cassels, leave little to be desired, and are much more useful in identification work than the usual drawings. The flowers are grouped according to color, ranging from white and greenish to red. The little book is priced at $1.50 by the Macmillan Company, New York.

Nature at Random

For many years the *Illustrated London News* has contained Nature articles from the pen of W. P. Pycraft of the British Museum of Natural History. These essays have covered a wide range of subjects in popular terms and have always been an immensely popular feature. In a manner as random as has been the publication of the stories they have now been gathered into a book entitled *Random Gleanings from Nature's Fields.* They are published with ninety illustrations by Hale, Cushman and Flint of Boston. The book is listed at $2.50.

NATURE IN PRINT

Why, Where, When, How

Having encountered a warm response to his volume *Nuggets of Knowledge,* George W. Stimpson has followed it up with a sequel,—if such books may be regarded as having sequels,—in the form of a book entitled *Popular Questions Answered.* This name is more descriptive of the subject matter of the work than was his previous selection of title, and the book is just what the title says. It is a collection of interesting, entertaining and generally engaging questions that pop into our minds as we go about our daily work and play. These questions are accompanied by authentic, thorough and helpful answers. In addition to presenting the queries and their replies, Mr. Stimpson has provided a careful and complete index,—a valuable addition. If you want to know whether elephants shed their tusks; why selling a dog is considered wrong; how the thistle became the emblem of Scotland; why forests were absent from the great plains or the answer to a thousand other questions, add this book to your library. It is fun to have it around and to pick it up in odd moments. The publishers are George Sully and Company, New York, and the price is two dollars.

R. W. W.

Music and Nature

The American mind, however practical it is, is not tuned to the arts. So busy has the new people been in carving out an empire that it has never caught the fine overtunes that change a nation into a definite culture. Only recently have the arts begun to find a response in the average mind, and the day is still far away when Americans, as Europeans do now, hum opera tunes at their labor. The possibilities of music as an accompaniment to Nature study and camp life have been particularly neglected. To point the way for teachers and leaders and to offer in passing a key to the study of music, Laura Cransberry Snow has prepared an excellent treatise on music and its Nature relationships under the title of *Music and the Out-of-Doors.* The little book indicates methods and approach by which the teacher or counsellor can introduce the subject, and furnishes her with brief but accurate studies of the leading operas, the music of different countries and of the primitive musical instruments, some of which can be duplicated, perhaps, by campers themselves. The lists of suitable phonograph records, books for leaders and classical songs are very valuable not only to the teacher, but to the individual seeking a sure guide to the door of musical appreciation. The book is sponsored by the Coordinating Council of Nature Activities, 77th Street and Central Park West, New York City, and sells for $1.25.

Chicago Plant Galls

The Field Museum of Natural History at Chicago recently issued as Botany Leaflet 16 *Fifty Common Plant Galls of the Chicago Area.* This is prepared by Carl F. Gronemann, and may be obtained for $.25 from Stephen C. Simms, Director.

Felix Salten Again

The little people of the forest—the rabbits—have inspired another woodland idyll from the pen of Felix Salten, whose previous book, *Bambi,* was a best seller. *Fifteen Rabbits* is written in the same sympathetic, limpid style; it pictures with the same pathos the tragedy of forest life, with the same sadly-sweet joy the pleasures and romances of the wild. Sportsmen, so called, will term the book sentimental because it dwells even more than *Bambi* on the horrible side of hunting. Naturalists will frown down upon its all-too-human dialogue and its anthropopsychic treatment of the mental processes of the animals. Yet the joyous, thrilling life of Hops and Plana, with their relatives, in the forest where He came often to make thunder; the battle of Brabo and Pasto, the elk herd leaders; the fate of Epi, who was made a pet; the sad story of Iago, the dog, who wanted the freedom wild creatures know,—these make *Fifteen Rabbits* delightful reading. After its perusal one may not know more Nature, but one has a better understanding of and sympathy for the forest dwellers, and the consciousness of having spent pleasant hours. The book is one of the Inner Sanctum novels published by Simon Schuster, New York, at $1.

Yellowstone Animals

With increasing interest being displayed by National Park visitors in wild life, Vernon Bailey's recent publication, *Animal Life of Yellowstone Park,* fills the need for a clear, concise account of the birds, mammals and invertebrates of the foremost American Park. Mr. Bailey, as Chief Field Naturalist of the Biological Survey, has spent practically every season of the year in Yellowstone; he has ranged in every corner of the preserve, and he knows the animals as few scientists know them. The major part of the book is devoted to mammals, but the chapters on bird and invertebrates are excellent, though brief. Written in non-technical language and filled with interesting animal stories that lighten and supplement the natural history studies, the book is easily worth the $4 that Charles C. Thomas, the publisher, asks for it.

Planning State Parks

Herbert Evison, Executive Secretary of the National Conference on State Parks, has performed a real service to park men and women and the public as well by collecting, in *A State Park Anthology,* many of the best ideas on state park planning evolved during the past sixty years. Intelligent men and women have, fortunately, been in control of park work, and they have laid down certain principles upon which proper development may take place. Most of their ideas, however, have been scattered through numerous publications, and many have never seen print. Mr. Evison has included essays by Albert M. Turner, Frederick Law Olmsted, Beatrice Ward Nelson, John C. Diggs and others of the leaders in the movement, and arranged them in a logical sequence which builds up a sure foundation for park planning. The book is published by the National Conference on State Parks, Washington, D. C., and is priced at $2.50.

Flowers are Nature's Cosmetics

Part of Garden at Littlecote, England
Home of "Wild Durell"

WHENEVER Nature feels the need of facial adornment she grows flowers. Flowers of exquisite beauty are the only cosmetics your garden needs to transform it into a floral Eden.

For more than a hundred years the house of Sutton & Sons has been breeding and improving flowers of all sorts. Among the hundreds of varieties to be found among Sutton's Seeds are many new sorts — some from the Orient, some from Africa, but all are choice strains that bloom freely. You cannot buy better seeds than Sutton's. They grow in America as thriftily as in England. Write for *Sutton's Amateur's Guide in Horticulture and General Garden Seed Catalog*. It illustrates and describes hundreds of choice flowers. Sent postpaid on receipt of 35 cents in stamps or International Money Order. SUTTON & SONS, Ltd., *Dept.* V, Reading, England.

Sutton's Seeds
ENGLAND'S BEST

FREE THE MOST CONVENIENT SEED BOOK EVER PRINTED

Fill in Coupon, Mail Today!

Becomes the favorite planting guide in every home it enters. Tells all about growing of flowers and vegetables. All the old favorite flowers and vegetables and host of new varieties. Makes garden planning easy. Every item tested by group of America's foremost seedsmen. Low prices, special offers!

HART & VICK, SEEDS
82 STONE ST · · ROCHESTER, N.Y

HART & VICK
82 Stone St., Rochester, N. Y.
Send me your FREE Spring Catalogue.

NAME_____
ADDRESS_____
TOWN_____ STATE_____

SWEET PEAS
A row 24 FEET LONG 10¢

BEAUTIFUL rainbow colors, delicate shades. Will be the beauty spot of ur garden. This special offer made to add new tomers. Try them. *Big FREE Catalog* tells all about best seeds, shows hundreds of bargains in trees, ubs, plants, vines, roses, evergreens, hedges, etc. ny new varieties. Write for it today. We pay postage.

SPRING HILL NURSERIES
x 208 Tippecanoe City, Ohio

FREE *Maule's* SEED BOOK

A GUIDE to successful gardening. Maule's vegetable and flower seeds are full of vigorous life. Guaranteed. *Write for* free copy of Maule's Seed Book.
W. HENRY MAULE, 222 Maule Bldg., Phila., Pa.

HINTS AND HELPS

(Continued from page 59)

most practical method of starting a quantity of plants in advance of the season. A hotbed is a frame with sash over it and the heat supplied by either steam pipes, a stove or, as generally practiced, using fresh horse manure. Permanent hotbeds are built of brick, concrete or tile with a depth of about three feet inside, allowing for two feet of fresh horse manure, six inches of soil and six or eight inches between the soil and the glass at the front side. Temporary hotbeds may be made without digging a pit, merely piling eighteen inches or two feet of manure upon the ground and placing a wood frame and sash upon it, heaping the manure up around the sides. Many things may be started in a hotbed and several weeks gained this way.

Mid-winter is a good season to prune trees and certain shrubs. Mild days may be utilized for this purpose. Shrubs that bloom upon last year's wood like spiraea, lilac, mock orange and similar things should never be pruned except just after their flowering period. Otherwise much of the blooming wood will be removed and unnecessary loss of beauty result. If you are bothered by mice gnawing the bark of trees and shrubs in your garden, it is well to let the prunings lie upon the ground and the mice may eat from them rather than damage your trees. Do not prune evergreens at this season. The best time to do this is just after they start active growth in the spring.

Whatever kind of garden you have, every year should see something new in it. Some new varieties of flowers or shrubs, a new feature such as bird bath, pool or seat. If your garden merely drifts along from year to year with the same old things in the same old way, you will gradually lose all interest. A garden either goes ahead or slips backwards. There is no such thing as standing still. In this, as in many other phases of garden activities, I would urge you to study the catalogs during the next few weeks, and in them you will find many items of interest. The long winter evenings can profitably be employed perusing the different items.

Just how do you read a seed or nursery catalog? Do you just look at the pictures or do you study the various items in search for information you are not already familiar with? There are many kinds of information in the modern catalog. I have before me one seed catalog that only has two pages of "novelties" which is rather unusual, as some of them have as many as twenty pages under this heading. This section of the catalogs always warrants careful study, but be sure that the things you select are actual novelties and are not to be found in other catalogs as regular items at usual prices. Another catalog contains a month by month guide as to work to be done and a planting calendar. There are also sketch planting plans for annual and perennial borders, lists of plants and seeds for different uses and locations, collections at special prices and countless other items of interest. Your catalog collection should consist of several dozen booklets and it should be kept where you can refer to it easily. Catalogs are one of the most valuable sources of garden information.

This book tells how

"How to Landscape The Home Grounds" is written *specifically* for those who wish to landscape their own grounds without the aid of a professional Landscape Architect.

It was compiled by a prominent Landscape Architect and is written in simple language that anyone can understand.

EACH STEP ILLUSTRATED

Simple charts and drawings show you each step from start to finish. Plans and cost estimates for every type of home are included.

This book tells in detail how to arrange trees, shrubs, vines, etc.; how to make an Outdoor Living Room or a lovely Rock Garden, and how to choose exactly the right variety for each location.

SEND ONLY 10c

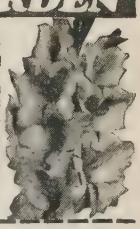
THE STORRS & HARRISON CO.
Box 208 Painesville, Ohio
Gentlemen: I enclose 10c for booklet "How to Landscape The Home Grounds."

Name_____

Address_____

KUNDERD'S FAMOUS GLADIOLI FOR YOUR GARDEN

64 NEW VARIETIES FOR 1931



NEW, sensational, ruffled and laciniated gladioli originated by A. E. Kunderd, the foremost Gladiolus Hybridist. His varieties are universal favorites, his primulinus, laciniated and plain petaled kinds are outstanding. See them, read about them, order them direct from Kunderd's FREE 1931 GLADIOLUS BOOK. Illustrates and describes 600 kinds. 52 shown in natural colors. Use the coupon below.

A. E. KUNDERD
102 Lincoln Way West, Goshen, Ind., U. S. A.
Dear Sir: Please send me the FREE 1931 Kunderd Gladiolus Book.

*Name*_____
*St. or R. F. D.*_____
*City*_____ *State*_____

Water Gardening

Our 1931 catalog will help you design a Water Garden that will delight your family and charm your friends. Its 40 pages of illustrations and color are the fruits of half a century's experience with water gardens. Our 15 acres of pools contain the most complete collection of Water Lilies in existence---thriving anywhere in the U. S. We guarantee safe delivery. Water Gardens cost as little as $3 postpaid.

Write for FREE catalog.

Johnson Water Gardens
NM-11 HYNES, CALIFORNIA

Famous Men

While Hamlin Garland's *Roadside Meetings* hardly falls within the scope of review by Nature Magazine, as it is largely a literary and cultural history, the delightful picture of John Burroughs it contains gives us an excuse to present it as one of the richest portrayals of a past age appearing in many months. Whitman, Stephen Crane, Ingersoll, Booth, Sidney Lanier, Eugene Field, Howells and a host of other leading figures in art and literature were friends or acquaintances of Garland's, and he was a faithful reporter of his meetings with them. For Burroughs, he seems to have had a particular affection, and his chapter on the vineyardist, which describes the Seer of Slabsides with accuracy and true understanding, is one of the best in an overflowing book. He knew Burroughs at the happiest time of the naturalist's life—the former Treasury guard had left the sunless room with its iron door, in which he had written *Wake Robin,* to return to the Hudson Valley where he could be close to the soil. He was writing constantly, and enjoying the friendship of such men as Roosevelt; his home was a gathering place for the great. Many of Burrough's ideas, but best of all, many of his characteristics, are recorded by Mr. Garland. Those who pick up this book to read of Burroughs will not end with him, but will continue with the delightful conversations, happenings and conflicts revealed by the author, and afterward will have a much clearer conception of the men and women who built the foundation to America's literature during the past half century. The book is published by Macmillan, and priced at $3.50. P. F. H.

Appleton's Series

The Appleton New World of Science Series increased its numbers by two during September by the release of *The Green Leaf,* by D. T. MacDougal of Carnegie Institute of Washington, and *The Conquest of Life,* by Theodore Koppanyi. Both make valuable contributions to the clearly written literature which is crumbling the walls long existing between the scientist and the layman. Mr. Koppanyi essays to take the whole field of biology for his province, traces its history, describes its important relation to experimental medicine, discusses evolution on which it is based and deals with diseases in a concise, compact manner which holds the reader like a great play. His book should be on every library table. *The Green Leaf* does not attempt as much, but thoroughly discusses the more recent developments in the study of leaf structure, chlorophyll and plant food-making. Both books are priced at $2.

Physics Work Book

An improved method of studying physics has been developed by A. W. Hurd, of Teachers College, Columbia University, and incorporated into a work-test book being distributed by Macmillan. The book divides the subject into different units, each of which is based upon everyday applications of physical laws. The pupil works up his own experiments from a perusal of different textbooks, and has to fill in blank spaces left in sentences in the notebook by way of noting down the results. The book is priced at $.64.

NATURE IN PRINT

Brotherhood of the Trees

High in the Kenya Hills, in Central Africa, tribesmen were faced with starvation as the result of the denudation of the forests by semi-nomadic tribes. The chiefs had forbidden marriage and their women refused to bear children, in order to avoid rapid extinction from lack of food. In order to alleviate conditions, Richard St. Barbe Baker established the order of The Brotherhood of the Trees, whose principles were reforestation and tree care, and the movement spread like wildfire over East Central Africa. The tribesmen, like Boy Scouts, became keenly active in doing their daily good deed. Mr. Baker, who wrote in July Nature Magazine of the Feast of the Trees in Palestine, describes the labor and adventures in the establishment of the order in *The Brotherhood of the Trees,* published at two shillings sixpence by Figurehead, 18, Adam Street, Adelphi, London, W. C. 2. A carefully written book, filled with dramatic incidents, it shows the part forestry plays in the lives of African natives and the enthusiasm that can be engendered over tree-planting among uncivilized races. It likewise indirectly, by example, reflects on the luke-warm reforestation activities of the white race, which does not seem, in this respect, to have as much foresight as its darker-skinned counterpart.

Different Holidays

How many grown-ups, to say nothing of children, would relish a year in which every day was different from the days of previous years? And how many, especially, would enjoy with new zest for life a year of holidays unlike the accustomed ones? Biddy and Buddy are two children, age seven and eleven respectively, and Margaret Warde, in *Biddy and Buddy's Holidays,* tells of their quest for adventures new and untried. They plan a community Christmas, they run a bird-house show, they mark trails, they imitate the squirrel to find the best things in their town, and at the end of the period vote the year the best in their lives. The book is for children, and adaptable as a school reader. It is published by D. Appleton and Company, New York, at $.96 and makes a desirable Christmas present for youngsters Biddy and Buddy's age.

Department Bulletins

Two bulletins valuable to the owner of woodlots have recently been published by the Department of Agriculture. *Chestnut Blight,* issued as Farmers' Bulletin No. 1641, deals with the spread of the fungus growth that killed 90% of all chestnuts in the United States, and with the utilization of the ruined trees. *Profits from Farm Woods,* Miscellaneous Publication No. 87, describes many successful adventures in "farming trees", and proves that forestry pays the farmer excellent dividends. Both pamphlets may be secured from the Department of Agriculture on request.

Prairie Legends

The magnificent life of the Great Plains forms the subject for an interesting little book, *Prairie Smoke,* by Melvin R. Gilmore, and published by the Columbia University Press. Much of the folklore of the Indian Tribes inhabiting the prairie before the days of the white man has been collected by the author and retold with quiet simplicity. The legends deal with the tribes of men, the four-footed tribes, the tribes of the air, and the plant tribes, and are rich with the wealth of a past that can be revoked only in story. Appealing particularly to children, yet very readable to anyone eager to absorb the romance of early American life, the book has real charm. It is published at $2.50 by the Columbia University Press.

Social Work Year Book

An event of unusual significance in the history of organized welfare activities in the United States is the publication by the Russell Sage Foundation of the first Social Work Year Book ever issued. Social work in this country, as the Preface of the new volume states, "has its professional organizations, its professional schools, its national conferences, and its periodicals. But unlike many other professional or occupational groups it has hitherto had no comprehensive, periodical record of its varied activities." The new publication has been undertaken by the Foundation "in the belief that the progress of social work will be advanced thereby, its unity increased, and popular understanding of its aims enlarged." Present plans call for biennial issues along the general lines of the volume just published.

Text Books

Three textbooks have come to our attention during the past month. D. Appleton and Company have issued books five and six of their series, Elementary Science by Grades. The series, edited by Frank W. Ballou, superintendent of Schools, Washington, D. C., and prepared by Ellis C. Persing and John A. Hollinger, form a valuable group of readers which will inform pupils along scientific and Nature lines as rapidly as they can absorb new facts. The third book is one of the Macmillan Agricultural Project Series, and is titled *Farm Crop Projects.* W. L. Burlison and A. W. Nolan, who prepared it, have included the latest scientific knowledge on growing grains and other agricultural products. The price is $2.

Birds and Salamanders

Among the valuable papers issued recently, *Observation on Some Wyoming Birds,* prepared by Arthur B. Fuller and B. P. Bole, Jr., for the Cleveland Museum of Natural History, and *The Salamanders of the Chicago Area,* written by Karl P. Schmidt and issued by the Field Museum of Natural History, in Chicago, are of particular interest to naturalists. The Wyoming birds were studied on three trips to the State, and the paper is one of the more important devoted to them. Mr. Schmidt has revealed a surprising number of species of salamanders within a few miles of our second largest city.

Tales of Birds

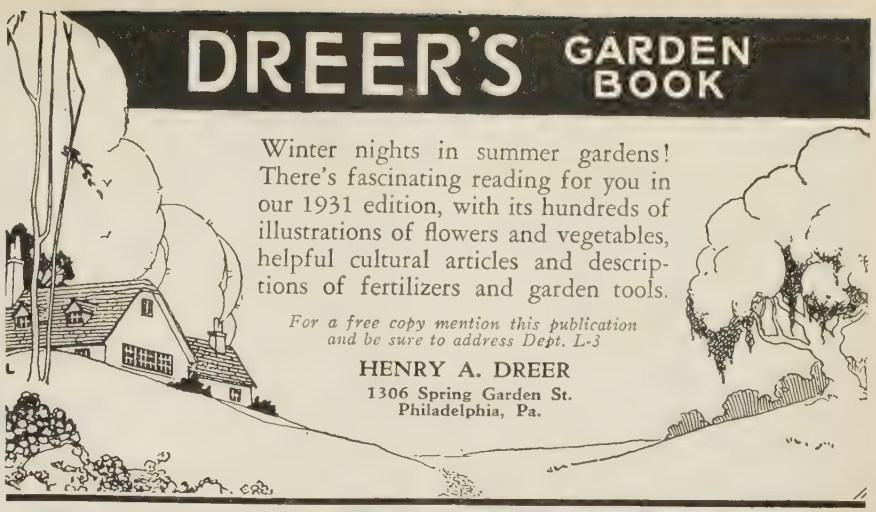
Any good book on birds is bound to sell. n our experience, birds are more popular han mammals with the public; they be- ome national emblems, they are brought nto the legends, superstitions and beliefs f races more frequently than other types f wild life. If *Bambi* can become a "best eller," a story equally good on birds should stablish new publishing records. While ve cannot expect that *The Best Bird Stories I Know,* by John Clair Minot, literary editor f the Boston *Herald,* will accomplish any uch feat, it will find a host of sympathetic eaders in every part of the United States. ohn Burroughs, Olive Thorne Miller, Wal- er Prichard Eaton, Albert Payson Terhune, W. L. Finley and a number of other lead- ng writers and naturalists contribute to nthology, and the titles, "The Last Ameri- an," "The Madcap of the Waters," "Gen- ral Jim," "How's Zat," to mention a few, ave been seen before in leading maga- nes. While a number of the stories have ae common fault of ascribing to birds the ntelligence and mental processes of humans, ae book is particularly free from inac- nracies. It is a companion volume to *The est Animal Stories I Know,* by the same uthor. W. A. Wilde Company, Boston, are ae publishers. The price is $2.

Nature Guides

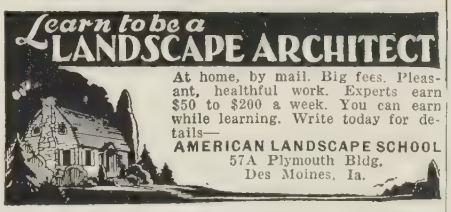
One of the reasons Nature lore has not ome into prominence in summer camps ore rapidly lies in the fact that few ounsellors have adequate knowledge to arry on the work. The number of trained aders is entirely inadequate for the de- and. To help teachers and camp authorities make at least a beginning, the Coordinat- g Council on Nature Activities has issued series of *Nature Guides* dealing with ars, salt water life, land and water ani- als, birds and their nests, and insects. hese have been prepared by Bertha Chap- an Cady and Vernon M. Cady, and should useful not only to schools and camps, ut to Nature Clubs and outdoor groups. here are eight pamphlets in the series, ch perforated to fit a small notebook. They e priced at $.10 each. Two additional pub- cations of merit from the same source are *dian Lore and Indian Gardens,* by Mel- n R. Gilmore, ($.50) and *Indian gends,* by W. A. A. Fiske ($.50). These e likewise for the notebook. The entire oup may be obtained from the Council 77th St. and Central Park West, New ork City.

Whence Our Food

The series of Geographical Readers issued the F. A. Owens Publishing Company ader the general title, *Our Everyday eeds,* has been enhanced by a recent pub- cation, *Our Food,* prepared by Josephine orthington and Catherine Victoria atthews. The book discusses the various mponents of three square meals a day, eir sources, the labor involved in prepara- on, and other details more economic than stronomic, yet interesting even to the ungster whose main interest in food is li arian. The book is amply illustrated th photographs gathered from all parts the world. It is priced at $.96, list, and 72 net.


DREER'S GARDEN BOOK
Winter nights in summer gardens! There's fascinating reading for you in our 1931 edition, with its hundreds of illustrations of flowers and vegetables, helpful cultural articles and descriptions of fertilizers and garden tools.
For a free copy mention this publication and be sure to address Dept. L-3
HENRY A. DREER
1306 Spring Garden St.
Philadelphia, Pa.

SHUMWAY'S
Good Seeds
produce Vegetables and Flowers of Superior Quality
New crop, tested seeds, grown from the finest selected stocks—sure, vigorous producers. For 61 years Shumway's Seeds have been sold at reasonable prices and have always given the desired results.
Extra packages sent free for trial with each seed order.
FREE—Write today for large illustrated catalog of vegetables and flowers.
R. H. SHUMWAY
121 S. First St., Rockford, Ill.


Learn to be a LANDSCAPE ARCHITECT
At home, by mail. Big fees. Pleasant, healthful work. Experts earn $50 to $200 a week. You can earn while learning. Write today for details—
AMERICAN LANDSCAPE SCHOOL
57A Plymouth Bldg.
Des Moines, Ia.

A. E. WOHLERT
The GARDEN NURSERIES Narberth Pa.
Oriental Flowering Trees
America's Finest Collection
Japanese Rose Flowering and Weeping Cherries, Flowering Crabs; in all varieties and sizes. Send for free book with color illustrations.
A. E. WOHLERT
927 Montgomery Avenue
Narberth, Montgomery Co., Pa.

WOODLAWN NURSERIES
GUIDE TO THE BEST Trees, Shrubs, Plants
Roses, perennials, bulbs, etc., to beautify your home and make your orchard and garden profitable. New shrubs, roses and other new rare varieties. 55 years devoted to growing the best at surprisingly low prices. Buy direct. Write today for 1931 catalog. It's free!
WOODLAWN NURSERIES
895 Garson Avenue, Rochester, N. Y.

Here is Your Free Copy
TREES
SHRUBS
FLOWERS
JUST off the press—the beautiful new catalog of America's Oldest and Largest Departmental Nursery. More illustrations in color than ever before — more new charts and diagrams to help you beautify your grounds—and the most complete listing of trees, shrubs, plants, seeds, etc., including uncommon varieties not usually found in the average Nursery catalog.
The Outdoor Living Room and Rock Garden
Easy-to-follow instructions on how to plan and plant a modern Outdoor Living Room or Rock Garden. Whether you plan to landscape your entire place or merely set out some new plants, you need this catalog. Send for it.
MAIL THIS COUPON!
The STORRS & HARRISON CO.
Box 211, Painesville, Ohio
Gentlemen: Please send me FREE, a copy of 1931 Spring Catalog.
Name.....
Address.....

SHRUBS — FLOWERS — FRUITS
Buy direct—save half. Satisfaction guaranteed. Complete Landscape Service. Over 50 years' experience. Free Catalog.
Green's Nursery Company, 15 Green St., Rochester, N. Y.

Nature Notebook

A notebook that will tell you what to look for each day in the year has been prepared by William Gould Vinal (Cap'n Bill), Director of the Nature Guide School at Western Reserve University, and published by the Slingerland-Comstock Company at Ithaca, New York. It is of the loose-leaf variety, adapted for five years' use, and, if properly kept, will make an excellent permanent record of things seen and done. The price ranges from $1.25 to $2.50, depending on cover.

Old Rock In Museum

A rock specimen, deposited 80,000,000 years ago by simple, one-celled plant structures that grew in countless millions, died, and left each its tiny bit toward the building of tremendous limestone beds, has been taken from Glacier National Park and put on exhibition at the National Museum, Washington, D. C. The rock is part of the concentric concretions found in the Altyn limestone, and represents some of the oldest sedimentary rock found on the globe.

Re Hunters

We submit the following letter inspired by an editorial in Nature Magazine without comment, except to observe that the courts will give redress against trespassers, and have since the time of the Norman Conquest. Too many landowners, however, are disinclined to cause trouble to intruders who do not seem to bother about the trouble caused by them.

Editor Nature Magazine:

Your editorial in the August number—"The Farmer and the Sportsman"—is indeed timely and describes the situation truthfully.

There are woods in the rear of my place and every autumn when the hunting season opens the "gunmen" begin the slaughter of rabbits and squirrels—these little wild folk have been friendly all through the summer months and are not afraid of people so they are an easy prey to the "killer"—they become so tame that they will not run away. Two women friends have a farm in New Jersey and when the hunting season opens they are annoyed and defied by hunters crossing their property in spite of signs forbidding trespassing. There seems to be no redress. Two pheasants located in tall trees directly over their house and the women were afraid to leave the place for even an hour or two lest hunters get the birds.

Several years ago a friend visited me bringing with her three pure white guinea hens and one cock. She let them out of the hamper for a run—soon we heard a shot in nearby woods. When the hens did not return a search showed that the cock had been shot by a city sportsman who thought they were some rare Arctic bird, as we were later informed by a neighbor. If this kind of an ignoramus can get a license nothing is safe in the woods.

The farmer's rights and property are never considered by the average hunter—and the result is as you say—the owner regards him as an enemy and justly so.

J. L. BOYNTON

Steel-Trap News

Coincidentally with the vote in Massachusetts on the initiative petition for legislation against the steel trap—which petition was supported by the voters by an overwhelming majority—there appears the first issue of the *Anti-Steel-Trap League News*. This little publication is the official journal of the Anti-Steel-Trap League, which was founded by the late Dr. Edward Breck, who fought valiantly under its banner against the inhumanity of the steel trap. Would that Dr. Breck might have lived to witness the victory in Massachusetts! But that success does stand as a memorial to his courage and tenacity of purpose, just as the first issue of the *News* indicates that his aims and ideals are being ably carried on by Mrs. Breck.

Reading carefully the first issue of this publication we are delighted to note the general way in which the material it contains has been handled. Too often humane propaganda is so extreme, so sentimental or so impractical as to defeat its own ends. In editing the *News* Mrs. Breck has successfully avoided all three pitfalls. She has presented in its pages only factual material and practical propositions. This viewpoint must inevitably command respect and support.

NATURE NEWS and VIEWS

The victory in Massachusetts and the publication of a periodical devoted exclusively to the cause against the steel trap are in reality, however, but first steps in the progress toward the final emancipation of wild animal life from the sufferings of this instrument of needless torture. The movement is deserving of all the support that men and women interested in conservation of our natural resources in wild life and with humane blood in their veins can give to it.

The headquarters of the Anti-Steel-Trap League are at 1731 K Street, N.W., Washington, D. C. A word to them will bring a copy of the *News*. R. W. W.

Small Lens Binoculars

In the September number of this Magazine, appeared an article by Mr. Ed Wolff entitled "What's Inside a Binocular?" From this article one might get the erroneous impression that a pocket size prism binocular, because of its small object lenses, affords a small field of view. As a matter of fact, the size of the object lenses does not affect the field of view, but only influences the illumination.

The human eye can only use a limited amount of illumination. If more is provided, the pupil contracts. During daylight, the pocket-size binocular as well as the large binocular, will provide all the illumination needed. Only in the dusk has the large binocular an advantage. For the average Nature student, who uses his binocular during the day, the convenience of pocket size is obvious. As William L. Finley says of his ten ounce pocket binocular: It "is about as essential to a Nature lover as golf clubs are to a golfer".

International Peace Garden

The International Peace Garden, to be located on the boundary between the United States and Canada, and dedicated to the peaceful relations of the two countries, has progressed from an idealistic dream almost to reality. The National Association of Gardeners is fostering the garden in the United States, and an International Committee, on which are Mrs. Henry Ford, Rt. Rev. James E. Freeman, Alfred E. Smith, Owen D. Young and a number of other prominent people, is working to raise the sum of $5,000,000, which will form a permanent trust fund supplying a steady income for maintenance. Horticultural societies in every state are supporting the movement. Contributions are being collected at the offices of the National Association of Gardeners, at 522 Fifth Avenue, New York City.

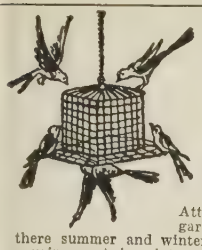
Reviving the Chestnut

In a single-handed attempt to revive the chestnut, destroyed by blight twenty-five years ago, Dr. John Stuart Thomson, author, sportsman and explorer, desires to hear of any nut-bearing chestnut sprouts. He asks finders of healthy chestnut trees to communicate with him at 361 Bergen Avenue, Jersey City, or to write to the Department of Agriculture. The chestnut, *Castanea americana dentata,* is considered to have been destroyed beyond hope of revival, but Dr. Thomson is making a determined attempt to bring it back.

Florida Conservation

As a part of its vigorous campaign to prevent forest fires and awake citizens to forest needs, the Florida Forest Service has compiled a number of conservation program suggestions in an attractive bulletin for use in clubs and schools. Suitable recitations, poems and songs are included, and a conservation play, adapted for children of school age, is presented. The bulletin, prepared by George Lee Bally, District Forester, is available at the Forest Service at Tallahassee.

At the homestead, Darien, Conn., a tree is planted in memory of Stephen T. Mather, former director of the National Park Service, by the National Life Conservation Society of which Mrs. Charles Cyrus Marshall is president



Protect Your WILD BIRDS

Attract wild birds to your garden or estate—keep them there summer and winter. One Townley Suet Cage—using suet in winter and bread, greens, etc., in summer—feeds the bird population of an acre of park or garden. Discourages migration. Approved by National Audubon, L. I. Bird Society, etc. Money back if not as represented.

Some protected territory open for distributors.

Write for details. **Starex Novelty Co.**, Dept. 410, 150 East 53rd St., New York City. **$1.50**

BIRD FILLING STATIONS

Patented July 13, 1926

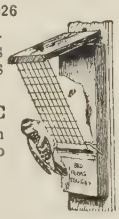
Make fine presents for BIRDS and FRIENDS alike.

AUTOMATIC

Suet always clean and accessible to last particle.

Feed the birds and keep them with you. Every home should have several.

Postage Paid in U. S.



No. 1, price $1.50 No. 1 to hang from tree or bracket.

No. 2, price $1.25 For window casings, porch columns, etc.

LEWIS P. KELLY, R. F. D. 4, Dept. N, Peoria, Ill.

BEAUTIFUL BIRDS

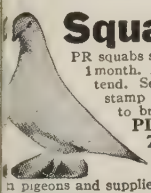
5 Pairs Assorted for $16.50

1 pr. Green Parakeets.....$5.00
1 pr. Yellow Parakeets..... 6.00
1 pr. Zebra Finches..... 3.50
1 pr. California Linnets..... 2.50
1 pr. Java Rice Birds..... 5.00

ACTUAL VALUE $22.00
SPECIAL PRICE $16.50

for all 5 pairs shipped safely to you by express. BEAUTIFUL CANARY SINGERS. Send P. O. Money Order with your order. ILLUSTRATED CATALOG N.

BIRD HAVEN **RESEDA, Calif.**



Squab Book FREE

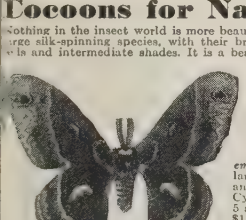
PR squabs selling by millions to rich trade. Raised in 1 month. No mixing feed, no night labor, no young to tend. Sell for double chicken prices. Send two-cent stamp for postage on latest free 48-p. book how to breed and profit by new fast sales method.

PLYMOUTH ROCK SQUAB CO., 704 H St., Melrose, Massachusetts.

Established 30 years. Founder of squab industry. Largest business in the world in pigeons and supplies. Reference, any bank. We ship breeding stock everywhere on three months trial, insuring satisfaction

Cocoons for Nature Lovers

Nothing in the insect world is more beautiful than the giant moths of our large silk-spinning species, with their brilliant colorings of blues, greens, reds and intermediate shades. It is a beautiful sight to see them emerge from their silk cocoons in the Spring, with embryonic wings, which in 20 minutes, expand to full size, 3 to 6 inches.



Hundreds Bought Last Year

I am now ready to supply individuals, clubs, educational institutions, etc., with living silk cocoons from which *moths will emerge this Spring*, comprising our large moths: Polyphemus, Cecropia, and possibly Promethea and Cynthia, assorted at these prices: 5 assorted cocoons for $1.00; 10 for $1.75; 15 for $2.25; 25 for $3.50; 50 for $6.00—Luna moth cocoons, 70c each—3 for $1.85. Automeris Io cocoons, 35c each, 3 for $1.00. In warm rooms some emerge during Winter. On request I will include actual sample wings of 3 of these moths FREE to new purchasers who order now 10 or more cocoons. 3 sheets of color photographic reproductions suitable for framing, showing life histories of these moths will be supplied for 35c additional. Pupae of rare Cith. regalis $1.35—3 for $3.60. Rare tropical butterflies 70c each, unmounted, six different kinds 60c each.

Ideal for nature study classes, kindergarten, boys and girls nature scout groups, schools, colleges and beauty-loving individuals. Transportation paid. Remit to

J. WM. WURSTER, Suite 1608-W, 104 Fifth Ave., N.Y.C.

TROPICAL FISH

For your home aquarium. Beautiful in color; unusual in their breeding habits. Finest collection of them in the State of New York. Come and see them at the Bronxville Nursery.

J. LINGG, *Aquarist*,
Central Ave., Tuckahoe Road
Yonkers, New York

A STRANGE PET

By Don Pinkston

Just before dusk each night for the past several weeks, John Bollinger, a farmer living near Fort Scott, Kans., has stood in the yard of his home, looked eagerly up into the darkening sky, and called, "Come, Hooty; come, Hooty."

For five minutes or more he may call quite without result. Then, with a peculiar whistle, something resembling the call of a kitten, a huge bird will settle down upon the roof of the shed, huddle there quite still for a moment, surveying the group below, and then drop noiselessly to the wood-pile.

The bird is "Hooty", an enormous timber hoot owl which is the pet of the entire Bollinger family.

A little kindness on the part of a crippled boy whose father gave him the bird as a tiny creature unable to fly succeeded in taming Hooty. When Mr. Bollinger found the little fuzzy bird in his barn early in February of this year, he at once thought of his sixteen-year-old son, Bernard, who has suffered from a painful spinal trouble for several years.

The sick boy became so attached to his strange pet that Hooty soon became a fixture about the house. The bird would come when called, and would sit for hours near the boy, while he stroked its features and exclaimed at the size to which it was growing.

When summer arrived, Bernard was sent to western Kansas for his health, and Hooty was left behind, despite Bernard's protests. Her playmate and master gone, the bird immediately disappeared.

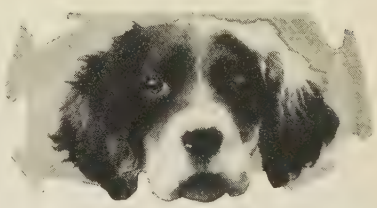
Her absence did not last for long, however. The following night Mr. Bollinger prepared a freshly killed rabbit and attempted to call Hooty from the nearby timber to which he suspected the bird had headed.

After a long while, his efforts were successful. Hooty settled to the wood-pile, suffered Mr. Bollinger to pick her up, and devoured the rabbit, tearing the flesh with her beak and swallowing it bones and all.

Since then the feeding, preceded by the calling, has been a nightly occurrence. Hooty has established herself in the timber, where members of the family often see her at a distance. But at night she deserts the wild for the easy food which awaits her at the Bollinger farmhouse, and, then, contented, settles down to spend the night in one of three favorite "bedrooms"—on the front porch, on the barn, or in the branches of an immense oak which rears its head in the barnyard.

Examined critically recently by Mr. Bollinger, who makes it a point each night to pet the bird while feeding it, it was discovered that Hooty has a wing-spread of four and a half feet.

What will happen when Bernard returns home is a question which cannot be answered. Some believe Hooty will return to spend all her time with her two-legged friends, but others maintain that the wildness of her kind will prove too much and that she will continue to hide by day in the dense timber. Bernard, alone, is confident of the result.

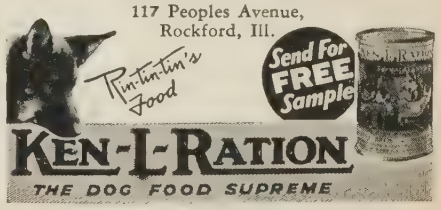


"More KEN-L-RATION *...please!"*

There he is asking for more of that most delicious of all dog foods—Ken-L-Ration. Dogs are sensible creatures, and they know they are getting something mighty good when they are fed this *balanced* food. Every can contains a banquet of *fresh* raw meat, golden ripe cereals, cod liver oil, charcoal and other beneficial elements—all perfectly cooked to retain all the vitamins.

Ken-L-Ration is the *original* balanced, canned dog food—widely imitated but never equalled. Ask for it by name. Sold by more than 100,000 dealers. Write to us for Free Sample.

CHAPPEL BROS. INC.
117 Peoples Avenue,
Rockford, Ill.



Trophies and Your RAW FURS

Made Into
Fur Coats, Rugs
Robes, Etc.

Jonas master craftsmen will convert your raw skins into stylish coats, wraps, chokers, robes, rugs, etc., at surprisingly **low cost.** We operate the largest fur tanning and dressing plant in the west. Write for our fur catalog—FREE.

Master Taxidermists

1023 Broadway **JONAS BROS.** Denver Colorado

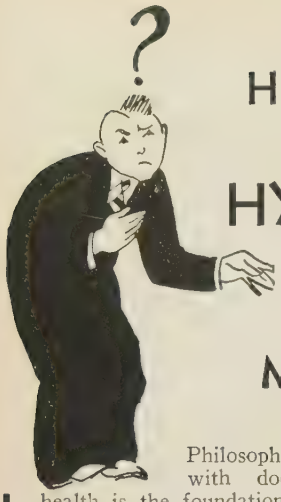
FREE—*A Treat for Your Dog*

Call it a Christmas gift if you wish and send today for crisp fresh samples of Miller's A-1 Dog Foods and a valuable dog book.

BATTLE CREEK DOG FOOD CO.
182 State St., Battle Creek, Michigan

WHITE COLLIE pups, the most beautiful specimens the dog world can offer, useful and intelligent. Send for Catalogue.

Comrade Farm Kennels, Galion, Ohio



Life Liberty Happiness and HYGEIA the Health Magazine

Philosophers agree with doctors that health is the foundation of happiness. Yet how many people undermine their happiness *at the foundation?* You, yourself, reader, may have to make a self-accusing answer to that question. And, if so, can you tell why? Do you know enough about your body and its functions to improve and preserve your health? Do you know when you need a doctor? Would you like to be informed in the vital health matters that lay the base to happiness? Then read HYGEIA, the friendly voice of the medical profession to laymen who would be happy.

HYGEIA entertains while it instructs

Every issue of HYGEIA is pregnant with health material that you cannot afford to miss. There are articles for all members of the family—and health stories for the children. *Ask your doctor about* HYGEIA. He will tell you that it talks about motherhood, sex education, mental health, disease prevention, diet, etc. in the chatty, but authentic, manner he would use if he had time to pay each one of his patients a personal call. HYGEIA makes health attractive and attainable. "The High Cost of Personal Neglect", "At what Age Should Sex Education Begin?" —these two articles appeal with others equally as stimulating in the January issue.

HYGEIA subscriptions are $3.00 a year. But the introductory subscription is $1.00 for 6 months. Send for your subscription now!—

introductory offer

6 months for $1.00

AMERICAN MEDICAL ASSOCIATION N.M.1/31
535 N. Dearborn, Chicago, Illinois.

Enclosed find $1.00 to cover the subscription price of HYGEIA for 6 months. I am a new subscriber.

Name .....

Address .....

An Albino Oriole

An interesting visitor recently made several calls at our home in a suburb of Lincoln, Nebraska, writes Julia M. Harrison. Upon the first occasion the small boy of the family ran in to the house to announce that a white and yellow bird was in our back yard. We assured him that he was mistaken and went out to prove it to him. But there, playing about in the grape vines, was a bird the size of a Baltimore oriole, with pure white wings and back, a lemon yellow tail and a yellow head shading into white in the breast. The little fellow gave us the opportunity to inspect him at close range then and upon later visits.

We were completely mystified as to his identity until, upon following him a block or two that evening, we saw a female Baltimore oriole feeding him. Our decision, later verified by an ornithologist who came out to see him, was that he is a young albino Baltimore oriole. He is a beautiful, well developed specimen. Perhaps some of the bird lovers among Nature Magazine readers may see him and may be interested in knowing what he is and where he came from. We are hoping he will come back next year at nesting time.

Forestry Savings

"Everybody Loses when Forests Burn." This Forest Service Slogan contains a bitter truth, but fewer lost this year due to a reduction of 81 percent in the acreage burned over in National Forests. Though 7,450 fires started, as compared with 7,449 in 1929, only 181,889 acres were burnt over, although 989,107 acres were destroyed the previous summer. Man-caused fires decreased by 343. The Forest Service ascribes the good year to better fire-fighting methods, the use of the airplane as scout, public interest on the part of property owners, campers and local fire-prevention groups, and vigilance on the part of forest rangers. The slogan of the Forest Service seems to be bearing golden fruit.

Sketches from Heceta

In Lane County, Oregon, near Parrot Rock, where early in May hundreds of sea parrots drill into the soft strata to lay their eggs and raise their young, a lighthouse stands on a lonely cliff, writes W. H. Coffin of Woodburn, Oregon. The lighthouse keeper discovered that a ground squirrel, called, locally, the gray digger, was robbing his henhouse. He set a wire trap and caught him, but not wishing to kill the creature, he put on his hip boots and waded across a tidal creek, which has a depth of several feet at all times, and let him go. The eggs continued to disappear, and the trap was set again. Another squirrel was caught, and disposed of similarly. For three nights the same incident happened. Finally a neighbor said, "Man, you're catching the same squirrel!" The keeper, catching the animal again, daubed his back with paint, and again carried him across the creek. And the next morning there was the squirrel, with paint on his back! He could swim. The lighthouse keeper, still loath to kill him, did nothing for several days, but finally the intruder became too bold and the family tabby ended the egg stealing permanently.

FORESTS AND MANKIND

By

CHARLES LATHROP PACK
President of the American Tree Association

AND

TOM GILL
Forester

250 PAGES

64 ILLUSTRATIONS

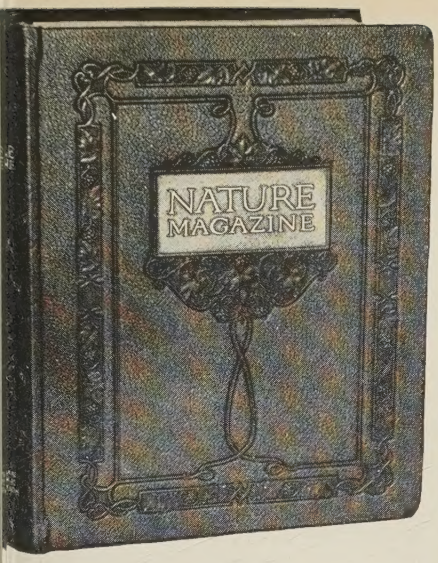
. . . a book to read and read time and time again by those who seek knowledge of the importance of the forests in their historical, social and economic relations to mankind.

Just Off the Press
Price $3.00

Order from

AMERICAN NATURE ASSOCIATION

WASHINGTON, D. C.



A New Binder for Nature Magazine

Every number of NATURE MAGAZINE is worth reading again and again. For your convenience and pleasure, we have secured an entirely new binder for copies.

Grasp this opportunity for greater enjoyment from your magazines—bind them in our special two-tone, hand colored cover, embossed in gold and they will be preserved to give you a lifetime of enjoyment.

Many requests make it possible for us to offer you these artistic, leather-like covers, pictured above, especially created for our members, in which you can insert each issue, as you receive it, in a half minute, without any punching or other annoyance to try your patience.

Each Binder Will Hold Twelve Issues and Is Guaranteed. Your Money Refunded If You Are Not More Than Pleased. $2.00 each

American Nature Association
1214 Sixteenth St., N. W.
Washington, D. C.

MAIL THIS COUPON—PRINT PLAINLY

THE AMERICAN NATURE ASSOCIATION
Washington, D. C. Date .....

Send me .....distinctive covers for NATURE MAGAZINE, for which I enclose $.....

If I am not unusually pleased I will return them to you within 5 days, and my money will be refunded to me.

Name.....

Street.....

City and State.....

The Leaping Hat

Park Naturalist Brockman of Mt. Rainier National Park plunged down the steep Ramparts Trail. The sun had set; dark was upon him. Suddenly his hat tilted down over his face, striking the bridge of his nose sharply. He adjusted the hat, thinking that a cone had fallen. Again the hat tilted over his eyes. Once more he straightened the headpiece, and once more it sprang forward as if alive. On the fourth assault he selected a weighty club and turned to face the enemy. There was no one there. His rapid walk became a rout, and thoughts of banshees filled his mind. Finally came the reassuring lights of Longmire. Just as he entered the illumined area, his hat leaped forward again—and the mystery was solved. He saw a tiny pigmy owl swoop silently in front of him. It evidently had mistaken the bobbing hat for an article of food, and with persistence had kept after it with beak and claw.

Parental Discipline

A little domestic drama involving two young flickers who refused to seek food for themselves was witnessed recently by Cora Wise Helman of North Manchester, Indiana. The mother was busy feeding, and evidently expected her progeny to follow her example. One bird caught the method, but the other two of the brood kept following their mother about crying for food. She paid no attention to them for some time, but after they had crowded close to her head with their beaks open and "yelled" each time she found good feeding, she became exasperated and chastised one of them so severely with her beak that he rolled over on the lawn. The other quickly hid behind a small catalpa tree. For a while afterward the birds were quiet, but ere long were again teasing their mother. At the first move on her part that might be interpreted as impatience both birds "ducked," one trying to hide under his mother's tail, the other running beyond the reach of her beak. Passing traffic frightened the birds from the lawn at that point, and when Mrs. Helman saw them again, the youngsters had learned to fend for themselves.

Trout Swims Lake Michigan

Within seven days a fourteen inch rainbow trout was caught twice, once at Port Washington, Wisconsin, and the second time near Grand Haven, Michigan, the Wisconsin Conservation Commission reports. The fish had travelled at least eighty-seven miles, the distance between the two points, during the week. On July 14 two Smith brothers caught the rainbow as they were net fishing, and tagged it. Two other commercial fishermen recaptured it on July 21. This fish was the third reported to have crossed Lake Michigan this year. The fact that rainbow trout freely pass from shore to shore is being used as argument for uniform fish legislation in the two states of Michigan and Wisconsin.

FREE CATALOG
NEW DESIGNS
CLASS PINS
PIN COMPLETE WITH DATE GUARD & CHAIN 2 COLORS
STERLING SILVER $1.35 ea. 12 OR MORE $1.20 ea.
SILVER PLATE .75 ea. .65 ea.
31
METAL ARTS CO., INC. 778 Portland Ave. Rochester, N.Y.

Why not have the best?
NORTHLAND SKIS
. . . skilfully and scientifically made from selected woods, are first choice among good skiers. They're best for running, jumping, or general use. The deer-head trademark identifies them. Write for booklet, "How to Ski".
NORTHLAND SKI MFG. CO.
World's Largest Ski Mfrs.
82 Merriam Pk., St. Paul, Minn.

TEACHERS AND NATURALISTS!
GIVE YOURSELF A CHRISTMAS PRESENT!
NATURE LORE
THE IDEAL CAMP FOR TEACHERS
In the heart of the picturesque mountains of Pennsylvania under guidance of expert naturalists.
THE PENNSYLVANIA STATE COLLEGE NATURE CAMP
First Camp June 25 to July 16
Second Camp July 15 to August 5
Illustrated bulletin on request
Professor GEORGE R. GREEN
Director of Nature Camp State College, Pa.

CULTURED SPEECH
AT LAST! Something New!
Learn Cultured Speech and Correct Pronunciation quickly from phonograph records. Also increase your vocabulary this new easy way. Be a fluent talker—cultivated speech is a social and business asset of the first importance. This new "learn by listening" method highly recommended by leading educators. Records sent on free trial. Write for information and free Self Test. No obligation.
THE PRONUNCIPHONE INSTITUTE
3601 Michigan Ave., Dept. 1601, Chicago

COLLEGE COURSES
AT HOME
Carry on your education. Develop power to initiate and achieve. Prepare for college. Earn credit toward a Bachelor degree or Teaching Certificates *by correspondence*. Select from 450 courses in 45 subjects, including English, Mathematics, History, Education, Psychology, Economics, the Languages, etc. Write for catalog.
University of Chicago
523 ELLIS HALL CHICAGO, ILL.

FREE RADIO CATALOG
LOWEST WHOLESALE PRICES
168 pages of radio bargains. New 1931 Screen Grid, all-electric, A. C. Sets in beautiful Consoles—also battery operated sets. Write today.
ALLIED RADIO CORPORATION
711 W. LAKE ST. DEPT. 846 CHICAGO

SHELLS Send one dollar for box of Florida sea shells or send two dollars for a stuffed or live alligator.
GIFT & PHOTO SHOP
P. O. Box 1958 Fort Myers, Florida
Correspondence from Collectors Solicited

Snake Plays Possum

A curious experience with a possum-playing hog-nosed snake is related by Dr. L. L. Rice of Camp Nakanawa, Mayland, Tennessee. Dr. Rice came upon the reptile gliding through the grass, and gently touched it. It immediately opened wide its mouth, turned its head back as if in distress, and twisted its body until it was lying on its back. Thus it remained, slowly moving to and fro, for several minutes. Dr. Rice stepped away a few feet, thinking the creature ill, and to his surprise, it suddenly recovered and went on its way again. He took it home, and placed it in an empty can, covered with a screen, and here it again performed as if in distress. He left it for a few minutes, and found it out on the porch floor animatedly seeking an exit. He again took it to the woods, and threw it gently on to the ground, and once more it possumed. Such a trickster, Dr. Rice thought, should have its liberty, so he left it unmolested after placing it in a tree, from which it quickly reached the ground and moved away. Such action is normal in the hog-nosed snake, *Heterodon platyrhinus*, and doubtless it sometimes serves to convince an enemy that the creature is effectively disabled.

Filial Support

The two young shoots of an old fallen birch tree near Lower Ausable Lake, New York, set an example in filial affection by keeping the parent alive, and have themselves become sturdy plants under adverse circumstances. Some years ago, the parent tree, a yellow birch, fell across a boulder ten or twelve feet through. Two branches on the upper side of the fallen tree, about seven feet apart, took on the burden of vertical existence, while from the other side, rootlets were sent down over the rock until they reached the ground. While the outer edges of the parent have died, the section between the two branches is alive and apparently healthy, supported by the vigorous offshoots. M. F. Westover, of Schenectady, New York, reports this example of filial support.

What Squirrels Eat

Shoes, corduroy trousers, maps, pencils and fingers have been added to the list of comestibles golden-mantled squirrels in Glacier National Park will eat, as a result of the observations of Ralph Teall, Naturalist Ranger. He was taking a rest on Piegan Pass early in the season, and felt something nibbling at his corduroy trousers. He looked up to find a pair of golden mantles licking and taking an occasional nibble at his shoes. Other feasters came, one trying out his finger as food. A Columbian squirrel arrived on the scene, tried out the map Ranger Teall was studying, then utilized the eraser on a pencil. He also tried a few nibbles at a gray wool shirt. Dr. G. C. Ruhle, Chief Ranger-Naturalist, reports that squirrels will commonly prey on their kind that have been run over by automobiles, even though squirrels are supposed to be herbivorous. Both Ralph Teall and "Doc" Ruhle accompanied American Nature Association Parties through Glacier Park this year.

Bombarded

A rain of fir cones might seem of little moment to the easterner, but C. Frank Brockman, Park Naturalist of Mt. Rainier National Park, is willing to testify that a bombardment of cones from the Amabalis fir rivals an attack of French Seventy-Fives. One day he had stopped to examine a few cones on the trail, when "Plop!" one landed near him. It was followed by another and another, and he had to run the gauntlet to escape. A few of the cones weighed half a pound apiece, and when they fall from the height of 200 feet—well, it is good to be elsewhere.

Shootless Wednesday

Wednesday, September 16, was a day of grace for ducks in Wisconsin. The season opened on the day before, and the 1929 legislature decided that so many guns would go off in the opening blast that the following day should be dedicated to relief. After the holocaust of artillery, the day of quiet must have seemed deathly silent both to the ducks and the humans living in duck country. The conservation spirit of the legislature is to be commended, but one wonders how effective the day proved to be. It probably served only to enable the ducks to get over their scare, and be less fearsome when shooting recommenced the next morning.

Senate Conservation Committee

A special committee of the United States Senate, chairmanned by Frederic C. Walcott of Connecticut, has been appointed to investigate all matters pertaining to the replacement and conservation of wild life and to recommend necessary conservation legislation. It will deal with federal game reservations, bird sanctuaries, wild life in parks and forests, migratory bird problems, and the seal, fish, fur and other industries depending on wild life. The committee plans to make exhaustive studies of all the problems involved, the laws now in existence, and the plans offered by organizations and individuals to meet a serious conservation situation. Members of the committee are Senators Harry B. Hawes, vice-chairman, Key Pittman, Charles L. McNary, and Peter Norbeck.

Hummingbird Pet

Mrs. Eliza Foss of Sanbornville, N. H., has a humming bird pet which she rescued from a cat when it was just learning to seek the nectar in the blossoms of her garden. She feeds it honey on a toothpick, or a syrup made of sugar and water which the bird takes from a small plate. The bird cares nothing about liberty now, but lives in the house or in her cage, where her dainty white cotton bed attracts her to sleep late in the morning. Her only difficulty is that her mistress seems to like the other pet in the family, a chow dog, and when the canine is caressed, she twitters and squeaks angrily, and dashes at her mistress' hand to peck her fingers.

INDEX TO ADVERTISERS IN JANUARY ISSUE

BINOCULARS

Du Maurier Co. 4
Goerz, C. P. 4
Loring, J. A. 4

BIRD HOUSES

Kelly, Lewis P. 65

BOOKS

Audel, Theo. 59
Bound Volumes 67
Forests & Mankind 66
Golden Rule 5
Hygeia 66
Maule, Wm. Henry 61
National Home Planting Bureau . . 59
Nature Books 7
Plymouth Rock Squab Co. 65
Storrs & Harrison Co. 61
Storrs & Harrison Co. 63

EDUCATIONAL

American Landscape School 63
American School of Photography . . 4
Fed'l School Commercial Designing . 2
Penna. State College 67
University of Chicago 67

GARDEN & ACCESSORIES

Burpee, W. Atlee, Co. 57
Conard-Pyle Co. 59
Dreer, Henry A. 63
Gillett's Fern & Flower Farm . . . 59
Green's Nursery Co. 63
Hart & Vick, Seeds 61
Johnson Water Garden 61
Kunderd, A. E. 61
Nature's Rhododendron Nurseries . . 59
Shumway, R. H. 63
Spring Hill Nurseries 59
Spring Hill Nurseries 61
Sutton's Seeds 61
Vaughan's Seeds 59
James Vick's Sons 59
Wohlert, A. E. 63
Woodlawn Nurseries 63

GIFTS

Gift & Photo Shop 67
Metal Arts Co., Inc. 67

HOTELS

Hotel Ludy 2
Hotel Piccadilly 2
Hotel Strand 2

KENNELS

Battle Creek Dog Food Co. 65
Chappel Brothers, Inc. 65
Comrade Farm Kennels 65

MISCELLANEOUS

Allied Radio Corp. 67
Bird Haven 65
Lingg, J. 65
Northland Ski Co. 67
Pronunciphone Institute 67
Starex Novelty Co. 65
Victor Animatograph 4
Wurster, Wm. C. 65

TAXIDERMY

Jonas Brothers 65

TRAVEL

Cuban National Tourist Commission . 3
South Africa Tourist Bureau . . . 1
The Travel Guild, Inc. 2

The American Tree Association stands for a constructive policy of forest protection and extension, to increase appreciation of forests as natural resources essential to the sound economic future of the country.

The Association directs encouragement of tree planting by the public; disseminates popular forestry news for the information of editors of the daily press; and compiles and distributes forestry news and reports on legislative progress for assistance of active foresters in the field.

THE AMERICAN TREE ASSOCIATION

CHARLES LATHROP PACK
President

ARTHUR NEWTON PACK
Secretary

PERCIVAL S. RIDSDALE
Treasurer

RICHARD W. WESTWOOD
Assistant Secretary

RUSSELL T. EDWARDS
Educational Director

NEW YEAR BRINGS TREE ARMY TO BIGGEST YEAR

READY for its biggest year, the tree-planting army looks to 1931 as a record-breaker. The call of The American Tree Association to mark the bicentennial of the birth of George Washington has swept the country. Schools, women's clubs, patriotic organizations, the Masonic order, civic clubs, are making plans to plant this year and dedicate the trees on Washington's birthday, February 22, 1932. The registrations on The American Tree Association's national honor roll are still coming in for trees planted last Fall.

The Colorado Federation of Women's Clubs has planted a tree on the spot selected in the capital grounds by Governor Adams. At Grand Rapids, the first planting of 6,000 trees in the Community Forest has been registered. Four hundred school pupils did the work. At Asheville, Mrs. Harmon Miller and her ten grandchildren planted ten trees for Washington. These examples show how wide is the interest in the national program The American Tree Association is conducting for the Washington Bicentennial Commission.

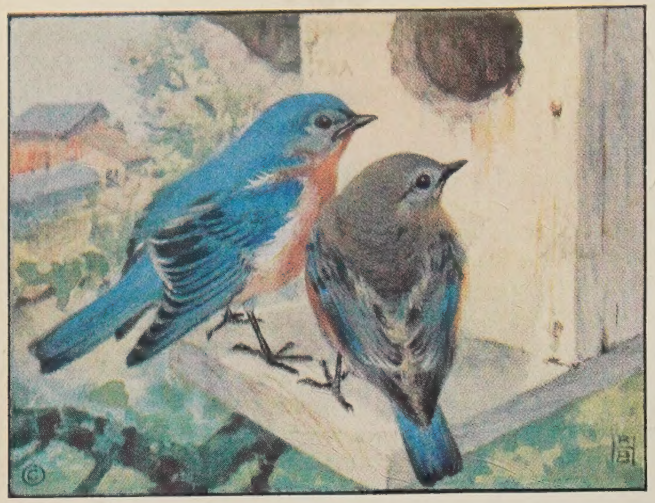
An idea of the 1931 program is given in the plans in North Carolina, Mississippi and Virginia. In the first, R. W. Graeber, extension forester, has sent the call throughout the state by the county agricultural agents and home demonstration agents. In Mississippi, Fred B. Merrill, the state forester, and the state Federation of Women's Clubs are working together. In Virginia, following the planting of the Washington tree by Gov. John Garland Pollard and the Wakefield Memorial Association, the Co-operative Education Association has sent the call to 800 local divisions of that organization. The D. A. R. in every state is working through local chapters. Every Masonic lodge in the country will plant either on lodge grounds or find space elsewhere. In hundreds of places the planting is to be a community event.

In Florida the Tallahassee Woman's Club planted the state tree just before the planting by the Colorado women. The tree was accepted for the state by Gov. Doyle E. Carleton following the annual board meeting of the federation. Mrs. Katherine B. Tippets presented the tree. Mrs. Walter L. Wylie and Mrs. William L. Wilson, Mrs. William A. Sessoms and Mrs. Harry Lee Baker had part in the program. H. L. Shearer of the Boy Scouts sounded assembly inaugurating the program.

Most of the states have their Arbor Day in the Spring. The time to plan is right now. Washington was a great tree planter. In tree planting each American finds a way to honor the Father of His Country.

Gov. John Garland Pollard of Virginia places the first state-planted tree for The American Tree Association to mark the bicentennial of the birth of George Washington. He is aided by Gov. C. W. Tobey of New Hampshire (right)

The first Washington bicentennial tree registered on the honor roll of The American Tree Association by clubwomen was planted by the General Federation of Women's Clubs in session at Denver. Mrs. John Dickinson Sherman of the Bicentennial Commission is fourth from the left



BLUEBIRD—*Sialia sialis*

TREE SWALLOW—*Iridoprocne bicolor*

BIRD AND ANIMAL PAINTINGS

By R. Bruce Horsfall

168 PAINTINGS IN FULL COLOR

ONLY ONE DOLLAR

MANY readers of Nature Magazine have asked when the beautiful color pictures of birds, mammals and insects that have appeared in Nature Magazine would be available separate from the Magazine. The demand has been so insistent that this is the result:

A beautifully printed book containing 168 pictures in full colors, three and one-half by two and one-half inches, and a beautiful frontispiece has been printed and is now available.

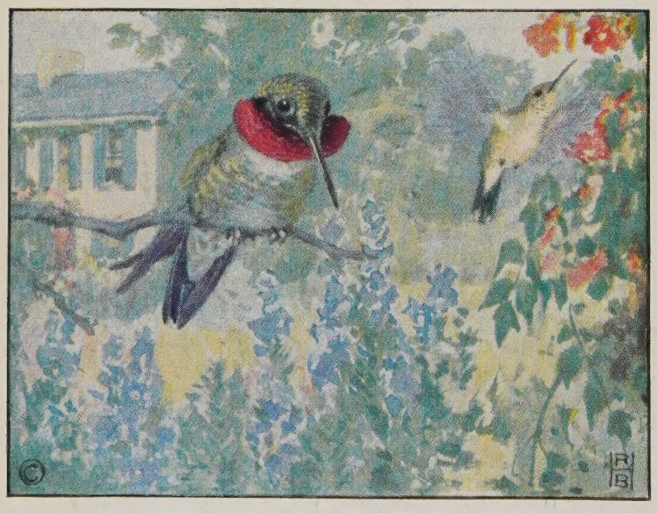
Each picture is accompanied by concise description of the character and habits of the subject.

Helpful suggestions are included to show the use of the book for school, camp, home and other educational purposes.

Despite the high cost of color plates and printing all this will cost the readers of Nature Magazine,—

ONLY ONE DOLLAR

RUBY-THROATED HUMMINGBIRD—*Archilochus colubris*



American Nature Association
1214 Sixteenth Street
Washington, D. C.

Enclosed please find $.....for.....books of R. Bruce Horsfall *Bird and Animal Paintings.*

Name.....

Street Address.....

City.....

State.....

(Please make address complete and legible)